

Natural England Commissioned Report NECR215

Natural Connections Demonstration Project, 2012- 2016: Final Report

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Minister Rory Stewart foreword

Natural England commission a range of reports from external contractors to provide evidence and advice to assist us in delivering our duties. The views in this report are those of the authors and do not necessarily represent those of Natural England.

Background

We learn to love nature as children, and our commitment to nature later in life - respecting it, protecting it, restoring it, or simply enjoying it, is built on that childhood foundation. The natural world is good for us all, children and adults - for our health and souls, it is a bedrock of society and the economy, and it matters for its own sake.

Last year, however, many thousands of children across England never stepped out into pure environment, never even set foot on a local beach, park or woodland. Tens of thousands more have never had a chance to build a sense of belonging, rooted in a local area. Our aim should be not only to give all children the chance to experience the natural world, but also to understand it, and respond to it.

This is not always easy. Some of us are lucky enough to fall in love with some particular part of the outdoors - with butterflies, or birds, or the hedgehog, and retain that love all our life. Others of us need some help, need to be taught what to look for and need to be shown different parts of nature before we find something to embrace. That is why outdoor education is so important for all of us.

And that is also why I am delighted that Defra, with our partners at Natural England, Historic England and Plymouth University have addressed outdoor education so systematically through this project. They have carefully examined the barriers teachers face, reflected on how teachers can get engaged in the natural environment, and how outdoor learning can be sustained in a school. And they have brought to life some of the best examples of outdoor education in the country.

The project has proved just how valuable the outdoors has been: rewarding and enjoyable for teachers, offering new avenues for learning and unlocking creativity. I was particularly struck by how teachers are using the natural world, not simply as a way of teaching botany or geography, but as a way of teaching other

subjects - English in woodland and Maths on the beach. And we shouldn't be surprised to discover it is also encouraging better attendance, reducing bullying and improving pupil motivation for learning.

These projects demonstrate that it takes real skill, and experience to turn the outdoors into a classroom. But when it is done properly, as it has been - triumphantly through the Natural Connections project - the impact is incredible and extraordinarily valuable. We owe a great debt of gratitude to all our partners, and to the teachers, families and pupils who participated in this project. This is a model, which should inspire us right across Britain.

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Further information

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1. Executive Summary

Background

Evidence¹ commissioned to inform the Natural Connections Demonstration Project identified that the fundamental challenges to learning outside the classroom in the natural environment (LINE) in schools were local and revolved around a lack of teacher confidence in teaching outside and fragmentation of LINE service provision. These underpinned the more traditionally cited challenges of curriculum pressures, concern about risks and cost.

This and other evidence was used by Natural England and a wide range of partner organisations to shape the design of the demonstration project. The project was funded by the Department for the Environment, Food and Rural Affairs (DEFRA), Natural England and Historic England, commissioned by Natural England, and delivered in South West England by Plymouth University.

Natural Connections was intended to:

- Stimulate the demand from schools and teachers for learning outside the classroom in the local natural environment.
- Support schools and teachers to build learning outside the classroom in the local natural environment into their planning and practices.
- Stimulate the supply of high quality learning outside the classroom in the natural environment services for schools and teachers.

This report presents the key findings from the project. Further detail will be available in Natural England Commissioned Report (NECR) 215 Annex 1. A shorter guidance document, Natural Connections Demonstration Project: 'Transforming Schools through Outdoor Learning'² that summarises the implications for practice will also be published.

Distributed delivery model

- Plymouth University devised a distributed model of responsibility, operating at four levels:

the central team → hub leaders → beacon schools → cluster schools.

- The concept was to build local networks in which local brokerage agencies ('hub leaders') would first recruit and enhance the work of schools that were already delivering LINE ('beacon schools') and who would, in turn, support other schools ('cluster schools') in developing their LINE practice. The aim was for a cultural shift in

¹ Dillon, J. & Dickie, I. (2012). *Learning in the Natural Environment: Review of social and economic benefits and barriers*. Natural England Commissioned Reports, Number 092.

² Natural Connections Demonstration Project: 'Transforming Schools through Outdoor Learning': Plymouth: Plymouth University. <https://www.plymouth.ac.uk/research/oelres-net>

participating schools towards embedding LINE in their policies and embracing LINE as part of their everyday practice.

- The distributed model was successful in recruiting schools to the project, supporting them to deliver LINE, and testing sustainable models of LINE delivery.
- A collaborative, partnership approach was fundamental to project success and brought considerable added value at all levels.

Hub delivery

- The project was delivered in South West England, with hubs established in areas of multiple deprivation in Bristol, Cornwall, North Somerset, Plymouth and Torbay. The hub leaders also worked with schools outside these areas to capitalise on interest in the project.
- Characteristics of a successful hub leader included:
 - alignment between the aims of the Natural Connections project and hub leader organisation
 - a thorough understanding of the education system and education networks
 - an enthusiasm for LINE and awareness of local LINE providers, including CPD providers.

School recruitment

- 125 schools were recruited and contributed to the evaluation. A further 65 schools took part in the project but did not contribute to project evaluation. Across the 125 schools, the project engaged with:
 - 2,531 teachers
 - 2,492 teaching assistants
 - 40,434 students.
- Schools most likely to engage with LINE all displayed strong leadership and were open-minded about trying new things. Size of school, Ofsted grading, percentage of pupils with special educational needs (SEN) or eligibility for free school meals (FSM) did not relate to whether schools were more or less likely to engage with LINE. The ability to recruit schools from a wide set of circumstances confirmed a key project assumption that there is a latent demand for LINE among the school population. The 125 project schools consisted of 106 primary, 9 secondary, 8 special and 2 all-through schools (primary and secondary).
- The first year of this four-year project was needed to establish the central team, hub teams and beacon schools before widening school recruitment. The length of time needed to recruit and establish groups of 20-30 schools in hubs was around 12 months. The optimum time to recruit schools was the summer term, allowing

integration of LINE into plans for the new academic year. The majority of schools recruited into the project were actively engaged for about 18 months.

- The most successful approach for recruiting and managing school participation was for hub leaders to enable groups of schools to operate flexibly, in ways that best met local needs without necessarily categorising schools as either beacon or cluster.

LINE implementation in schools

- An extensive evaluation allowed deep insight to be gathered on project implementation and outcomes of LINE.
- School survey respondents reported statistically significant increases in the time spent on LINE activity across all school terms.
- Schools adopted many different models of LINE implementation, with anything from a few staff to many or all of the staff involved with LINE. In all cases, implementation was dynamic and changed regularly as staff developed and broadened their LINE practice. A pattern emerged in school survey comments in which schools: first, understood the benefits to pupils and teachers; second, increased levels of LINE activity; and third, increased the regularity of LINE activity and embedded LINE practice across the school.
- Schools invested time, goodwill, energy and funding in LINE. The characteristics that underpinned and reflected successful LINE implementation were:
 - creation of a positive staff culture towards LINE (including confidence and wider recognition and reward)
 - growth in school aspirations for LINE
 - enhancing teaching practice across the curriculum
 - collaboration and networking with other schools
 - development of school grounds.
- Over 90 per cent of schools surveyed agreed that LINE was useful for curriculum delivery.
- LINE was used across all curriculum areas, most regularly and consistently in the core subjects of science, English, maths and PE. The percentage of maths lessons taken outside showed a noticeable increase over the life of the project. No statistically significant increase in non-curricular LINE activities was reported, although case-studies demonstrated that schools valued these LINE activities for their contribution to the foundational aspects of learning.

- The most frequently reported challenges to LINE development in schools at recruitment were:
 - staff lacking confidence in working outside
 - staff uncertainty about linking LINE to the curriculum
 - lack of funding
 - the need for volunteer support
 - time.

- The first four challenges all reduced during the project lifetime, reflecting schools' developing understanding of how low-cost LINE could support school priorities and be embedded into regular curricular and non-curricular activities. Time, as a challenge, increased over the project as teachers developed understanding of the time needed to plan and deliver increasingly complex LINE practice.

- Reflecting the project assumptions, challenges to LINE were school specific and changed during the course of the project. This was shown to be an ongoing process in which schools addressed immediate challenges and then, as confidence in LINE practice developed, they identified new challenges. Results suggest that an initial audit and priority assessment to develop a school action plan for LINE, followed by regular reviews, would help to identify and address solutions to particular issues as they changed over time.

- Project schools chose to focus on building in-house responsibility and capability for LINE, generally within school grounds rather than in local green spaces within walking distance. Engagement with LINE provider services did not change significantly over the project, although some schools reported an increase in demand for services, including those to support CPD and school grounds development.

- CPD was central to delivery of the Natural Connections project. Its role was to support school staff in:
 - developing knowledge, understanding and practice of LINE
 - giving confidence in the efficacy of LINE, thereby supporting efforts to embed LINE and to shift the school teaching and learning culture to one that embraced LINE
 - addressing practical challenges such as funding, grounds development and health and safety requirements.

- There was a small but statistically significant increase in the proportion of volunteers involved in LINE across project schools. Project findings show that the resource to support volunteer development needs to be flexible because schools tended to build their confidence in LINE before considering the additional demands of supporting volunteers.

- The project confirmed the need for a broad multi-platform media strategy that was responsive to the needs of schools. Collaborative development of on-line resources, designed by local LINE practitioners for local LINE practitioners emerged as the most likely ways to successfully support delivery. In addition low-cost, responsive social media such as Twitter and blogs were useful for disseminating information.
- Gathering evaluation and reporting data from schools required considerable effort. This was assisted by promoting baseline surveys as a means to inform the action planning needed to support schools with their LINE.

Impacts of LINE

- Reflecting the insight research³ and project assumptions, the results confirmed increases in all the positive outcome areas assessed, for both teachers and pupils.
- Positive impacts for teachers. The following proportions of schools agreed that LINE had a positive impact on:
 - teaching practice (79 per cent)
 - health and wellbeing (72 per cent)
 - professional development (69 per cent)
 - job satisfaction (69 per cent)
 - teaching performance (51 per cent).
- Positive impacts for pupils. The following proportions of schools agreed that LINE has positive impacts for pupils:
 - enjoyment of lessons (95 per cent)
 - connection to nature (94 per cent)
 - social skills (93 per cent)
 - engagement with learning (92 per cent)
 - health and wellbeing (92 per cent)
 - behaviour (85 per cent)
 - attainment (57 per cent).
- Pupil feedback reflected teacher feedback, with 92 per cent of pupils surveyed agreeing that they enjoyed lessons outside and 89 per cent agreeing they felt happy and healthy in lessons outdoors.

³ Rickinson, M., Hunt, A., Rogers, J. & Dillon, J. (2012). *School Leader and Teacher Insights into Learning Outside the Classroom in Natural Environments*. Natural England Commissioned Reports, Number 097.

- In the surveys, a majority of schools (57 per cent) attributed a direct positive impact of LINE on pupil attainment, significantly more than those who thought it had no effect. Teachers in case-study interviews reported having more confidence that LINE contributed to attainment than was indicated by quantitative surveys.
- Many case-study schools reported that they engaged with LINE for reasons that were related to supporting attainment and character development, including improving behaviour, social skills, health and wellbeing and engagement with learning. All of these were cited as foundational to successful learning. Interviewees from case-study schools emphasised that they also valued LINE for enabling wonder, creativity, support for particular concepts and bringing subjects to life.
- In case-study interviews, teachers attributed a positive impact on pupil health and wellbeing to LINE, reporting that it offered a chance to escape the pressures of the classroom, the space to reflect, and the space and time to be physically active.
- In case-study school inspection reports, Ofsted frequently cited the benefits of high-quality LINE for pupil progression, enjoyment of learning, and spiritual, moral, social and cultural development.
- Evidence from the Natural Connections project has been used to propose the following model of the academic benefits of LINE



Figure 1: The pathway to raised attainment through outdoor learning

Sustainability and legacy

- The project provides evidence that a distributed model of independent local brokerage can unlock a latent demand for LINE in schools and support schools to overcome local barriers, adopt and embed low-cost LINE practice, and deliver a range of positive outcomes for teachers and pupils.
- The project provides evidence for a sustainable cultural shift towards LINE practice in schools. School staff recognised the benefits of LINE, evidenced by the statistically significant increase in the proportion of teachers (32 to 52 per cent) and teaching assistants (35 to 48 per cent) involved in LINE over the project lifetime.
- Support for ongoing LINE networking among schools will require continued coordination at a local level. Hub leaders have developed and are currently testing models for sustaining LINE networks as part of their core activities.
- Other outputs that contributed to project legacy include:
 - a suite of evaluation tools that can be shared and that can be used to inform development of standard LINE evaluation approaches
 - lessons that informed development of the Countryside Classroom website
 - additional activity such as the 'Naturally Healthy Devon Schools' project.
- The demonstration project cost an average of £17.50 per pupil or £5,600 per school over the project lifetime. If the hub model were amplified, without the associated costs of running a demonstration, it is estimated that the delivery cost would be approximately £1,000 - £1,200 per school per annum. This, however, does not include the in-kind support attracted by the demonstration project or any kind of overall project management, which could raise the costs to around £1,500 - £2,000 per school per annum. It also assumes approximately 20 schools in each hub.
- The planning for future large-scale, demonstration projects needs to take account of the time required to establish the central and local project teams, recruitment of schools into the project and the resources required for managing a distributed delivery model, comprehensive evaluation programme and delivering detailed project monitoring and reporting. In essence, for this demonstration project to be successful, it required contributions from the project partners of considerable additional resources and goodwill.

Conclusions

- The project provides strong evidence that a distributed model of independent brokerage can unlock latent demand and support schools to overcome local barriers to LINE, to adopt and embed low-cost LINE practice across the curriculum, and to deliver a range of positive outcomes for teachers and pupils.

- Selection of hub leaders with the appropriate skill set is critical to this distributed model. Hub leaders need considerable experience in education at a regional and local level, and in coordinating support and networking opportunities for schools in order to share and develop outdoor learning practice. Sufficient management capacity and skills at both central and hub level are essential to support this model.
- The evidence suggests that demand was enhanced through whole school cultural shifts that supported the sustainable adoption of LINE policy and practice as it became part of 'what schools do'. The fact that schools invested in their school grounds as educational places, in leadership for outdoor learning, and that they used LINE predominately for core curriculum subjects is indicative of how LINE was increasingly recognised and promoted within schools.
- While barriers vary between schools, good relationships with hub leaders are essential to help identify appropriate forms of support. Despite a diversity of challenges for schools, these were reduced during the project and the principal barrier became time to facilitate as much LINE as schools wished to do; a clear indication of latent demand.
- The project was able to capture qualitative insight and quantitative data on a range of positive outcomes for schools, providing motivational evidence for schools and useful information for policy makers, external funders and service providers in both the public and private sectors. In addition, detailed analysis of the relative effectiveness of the delivery model has helped to clarify the essential elements of outdoor learning development. These insights in turn will be used to inform strategies and plans to amplify support for LINE delivery in schools at both a strategic and a local level.
- The scale of recruitment and retention of schools, and the considerable added value offered at all levels, points to the success of the demonstration project and to its participants' commitment to LINE.

2. Project Context

This section sets the context for the delivery of the Natural Connections Demonstration Project which was commissioned by Natural England and delivered by Plymouth University. The project was funded by the Department for the Environment, Food and Rural Affairs (DEFRA), Natural England and Historic England.

The DEFRA (2011) White Paper *The Natural Choice: securing the value of nature* responded to evidence that children's opportunities to learn outside had been diminishing. In addition, the White Paper recognised the diverse benefits that come from learning outside. The White Paper explicitly stated the government's aim to offer every child in England the opportunity to experience and to learn about the natural environment, and declared that it would:

'...remove barriers to learning outdoors and increase schools' abilities to teach outdoors when they wish to do so' (DEFRA, 2011, p.4).

'...the aim is to deliver a better coordinated local service to schools and teachers, to enable much greater numbers of schoolchildren to experience the benefits of learning in the natural environment' (DEFRA, 2011, p. 48).

The Natural Connections project was mentioned in the White Paper as a specific commitment to deliver this initiative.

Natural England worked with a wide range of partner organisations to lead the development of the project proposal, commissioning and collating several pieces of research to inform its early design. An evidence synthesis⁴ identified that the fundamental challenges to learning outside the classroom in the natural environment (LINE) were local and revolved around a lack of teacher confidence in teaching outside and fragmentation among service provision for schools, and that these underpinned the more traditionally cited challenges of curriculum pressures, fear of accidents and cost. A national insight study with school leaders and teachers was then used to test these conclusions and to suggest possible solutions⁵. As one of the reported barriers was the need for additional adult supervision, Unell and Castle's research (2012)⁶ then reviewed the roles that volunteers could play in supporting teaching staff when taking children outside and looked for other relevant school-based volunteering models.

⁴ Dillon, J. & Dickie, I. (2012). *Learning in the Natural Environment: Review of social and economic benefits and barriers*. Natural England Commissioned Reports, Number 092.

⁵ Rickinson, M., Hunt, A., Rogers, J. & Dillon, J. (2012). *School Leader and Teacher Insights into Learning Outside the Classroom in Natural Environments*. Natural England Commissioned Reports, Number 097.

⁶ Unell, J. & Castle, R. (2012). *Developing sustainable volunteering within the Natural Connections Demonstration Project: a review of evidence*. Natural England Commissioned Reports, Number 096.

Based on these insight reports, the final project invitation to tender document (ITT)⁷ outlined three project objectives:

- To stimulate the demand from schools and teachers for learning outside the classroom in the local natural environment.
- To support schools and teachers to build learning outside the classroom in the local natural environment into their planning and practices.
- To stimulate the supply of high quality learning outside the classroom in the natural environment services for schools and teachers.

Natural England established an independent Advisory Group of individuals to advise them during the tender process for the Natural Connections Demonstration Project, including the assessment of tender submissions. The project was awarded to Plymouth University in June 2012.

⁷ Natural England (n/d) *EU Tender for Natural Connections – Demonstration Project 23895. Invitation to Tender: Specification.*

3. Project Principles and Purpose

The long-term aim of the initiative outlined in *The Natural Choice* White Paper was to enable all children within England to benefit from learning experiences in their local natural environments. The Natural Connections Demonstration Project was described in the ITT document as the first phase of realising this ambition. It aimed to develop understanding of what was needed to engage schools with LINE and enable a culture change within schools, with teachers embracing both the concept and the practice of taking curricular learning outside. If successful in both stimulating and meeting the apparent latent demand in schools, it was intended that the lessons could be replicated and amplified more widely, and that subsequent phases might have different foci such as outdoor play or health outcomes.

3.1 Project principles

The following principles were applied in defining the requirements of the Natural Connections project:

- **Scale** – the scale of delivery must be appropriate to enable effective testing of all the required elements of the demonstration project.
- **Targeted** – focus should be where the need is greatest, supporting primary and secondary schools in areas of multiple deprivation that provided little or no learning in natural environments.
- **Local** – activity should enable use of green spaces within walking distance of school, including but not limited to school grounds.
- **Scope** – focus should be on activities shaped to meet individual schools' needs and priorities by providing them with the most effective ways to support inspiring and effective learning in local green spaces, across the curriculum.
- **Enabling** – activity must add value by providing schools with independent support to access the full range of existing, quality learning LINE opportunities, resources and champions available locally. This should include opportunities related to local parks and gardens, farms and nature reserves, local businesses and environmental organisations, informal and formal volunteering infrastructure, other schools, and local people. Natural England expected that the demonstration project would add value by building on existing resources and infrastructure.
- **Capacity building** – activity should look to provide schools (and local practitioners/providers) with expert and independent face to face advice to build awareness, understanding and confidence in LINE and to test the potential of formal and informal volunteering in building support in and around schools.
- **Sustainable change in practice** – the delivery model should aim to embed a sustainable change in practice, both in how schools approached LINE and in the nature of the services available to them to ensure a legacy for those involved beyond the life of the project.

- **Financially sustainable** – the delivery model must aim to become financially sustainable. Therefore it was expected that the project would fully test revenue model/s, with consideration given to exploring the use of relevant funding streams to support delivery and testing the potential to charge for services.

3.2 Project elements

These principles informed the expectations for each of the four core elements of the project to:

- **Establish an independent brokerage** between schools and the range of opportunities and support that exist to support schools and progress local LINE. The target number of schools to be involved in the project was 200.
- **Establish a volunteer development programme** to test the role that volunteering might play in the menu of support services made available for schools in the delivery of LINE. The estimated target number of volunteers was 200-500.
- **Establish a participative web service** to signpost and enable better use of existing LINE assets and resources.
- **Evaluate the effectiveness of the delivery model**; to provide ongoing evidence to shape and develop the delivery model and to capture outputs and outcomes for the key beneficiaries such as schools, teachers, children, local communities and providers.

3.3 Project purpose

The purpose of the demonstration project, therefore, was **to establish and test the effectiveness of the four required** elements in achieving the project's aims and objectives and **provide clear recommendations for future activity and development.**

LINE was defined as learning that took place outdoors in natural environments either within school grounds or within walking distance from school. The focus was on primary, special and secondary schools (maintained and academy) in areas of high multiple deprivation. The project model was to be tested over three years, with three months allowed for project up set-up (September – December 2012) and three months to complete the final report once project delivery had effectively ceased (January – March 2016).

As this was a demonstration project, evaluation was central to informing delivery and to capturing project outputs and outcomes. The evaluation was designed to:

- Inform ongoing project design and delivery through monitoring progress, successes and challenges in all project elements.
- Monitor the scale and scope of the project as it changed over time.
- Evaluate the effectiveness of the structures and processes put in place by project teams in meeting the aims of the project.
- Monitor the impact of the project on participating schools, organisations and individuals.
- Monitor project outputs.
- Monitor and report on the financial sustainability of the project brokerage model.

- Monitor and report on the central team's targets related to income generation.
- Capture the project learning in order to make evidence-based recommendations for the design of future programmes aimed at improving the supply, demand and simple evaluation of effective school-based LINE.

We describe the evaluation approach, design and methods in Section 5.

4. Project Delivery Model and Structure

4.1 Distributed project delivery model

Plymouth University devised a distributed model of responsibility, operating at four levels:

the central team → hub leaders → beacon schools → cluster schools.

The concept was to build local networks in which the local brokerage agencies ('hub leaders') would first recruit and enhance the work of schools that were already successful in LINE ('beacon schools') and who would, in turn, support other schools ('cluster schools') in developing their LINE practice.

The vision behind the model was a 'needs-led' approach, building sustainable LINE that was responsive to local circumstances, enabling participation and collaboration among schools, and with clusters of schools being supported to become autonomous groups that continued to work together after project funding ceased.

The **central team** directed, managed and monitored project activity, including making processes visible and replicable. They also provided direct support for professional development, evaluation, volunteering, communications, marketing, web service and other on-line infrastructure development.

The central team recruited **hub leaders** in five locations with areas of high multiple deprivation (Bristol, Cornwall, North Somerset, Plymouth and Torbay) to undertake local brokerage. The original target for the five hubs was that they would each support around 40 schools, initially recruiting and supporting five **beacon schools** that were able and willing to support a local **cluster** of a further five – seven schools (per beacon school) that had limited experience of LINE at the time of recruitment.

A **LINE lead** was selected within each beacon school who became the main contact for the project. Supported by the hub leader, the LINE lead recruited cluster schools and helped organise the collaboration and sharing of expertise.

All project schools were asked to build a '**LINE team**' of up to seven people, including senior management, a governor, parent, teachers and other staff to ensure that LINE responsibility was shared. This team approach was essential to ensure that expertise would not be lost if individual staff members left the school.

The intention was that the beacon schools would demonstrate success in and benefits from teaching and learning across the curriculum through LINE. This would then encourage other schools to take part and create mutually supportive communities, which could be responsive to local priorities, needs and strengths. Over time, as cluster schools developed their expertise, the aim was that they might also become beacon schools and provide support for

other local schools willing to engage with LINE. The intention therefore was that this approach would develop a sustainable model through local peer support and that it might expand both internally throughout each individual school and externally across schools as the clusters grew in confidence and expertise. The aim was for a cultural shift in participating schools towards embedding LINE in their policies and embracing LINE as part of their everyday practice.

A metaphor of strawberry runners was used to describe the model, reflecting that support and growth was intended to be horizontal rather than top-down, to enable innovation and independent development of LINE at a local level, with transfer of information and learning across all levels.

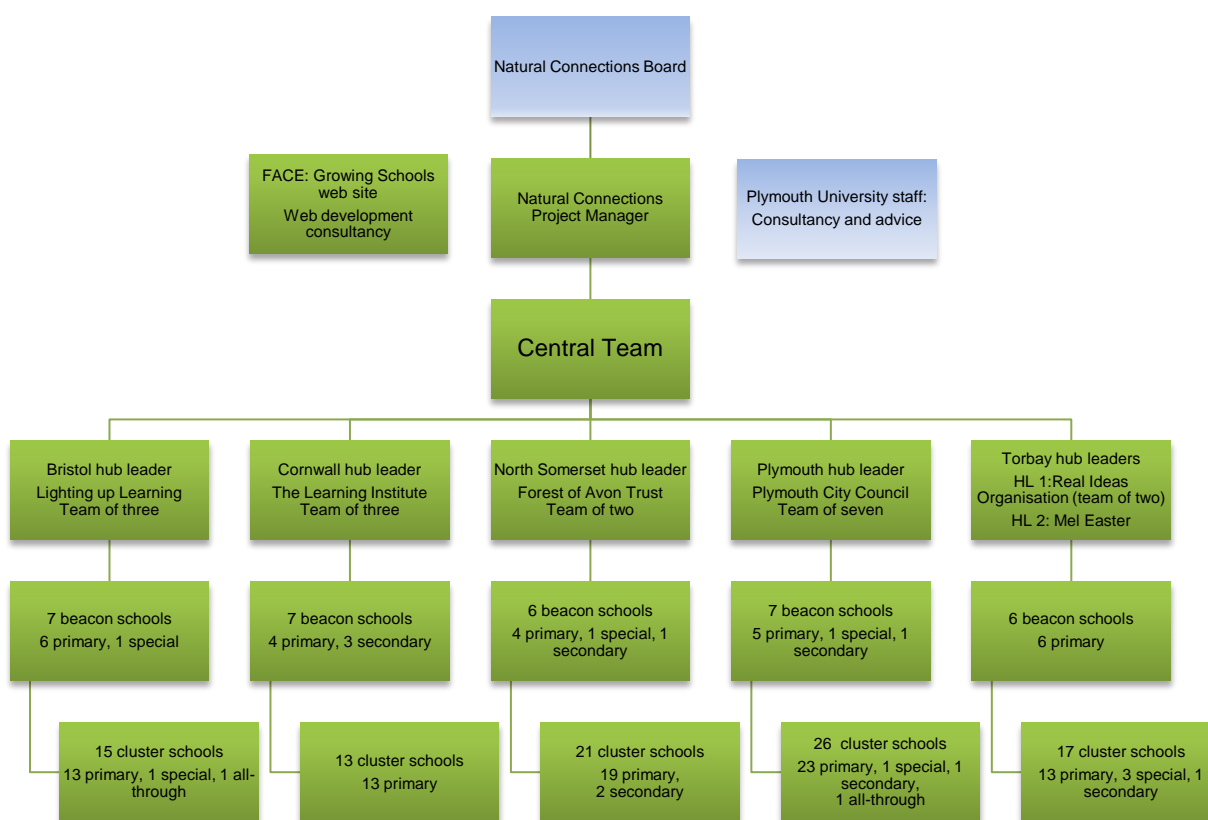


Figure 2: Project structure including number and type of schools recruited

4.2 Successes of distributed project delivery model

- **The distributed model of a central team** supporting a network of hub leaders, who in turn each supported clusters of schools, proved very successful in recruiting schools and supporting them to embed LINE (see Section 6).
- **The model was highly cost effective**, and brought a significant amount of added value and in-kind support to the project. The cost of project delivery over its lifetime averaged **£5,600 per school or £17.50 per pupil**. Benchmarks, for example those in

the Education Endowment Foundation toolkit⁸, range from £70 per pupil per annum (low cost intervention) to £1,000 per pupil per annum (very high cost intervention). It is estimated that, if the distributed model were amplified without the central costs associated with running a demonstration project, including a rigorous evaluation, a cost of £1,000 - £1,200 per school per annum would be needed to support delivery. This, however, does not include the in-kind support attracted by the demonstration project, any kind of overall project management or any evaluation, which could realistically raise the costs to approximately £1,500 - £2,000 per school per annum. It also assumes approximately 20 schools in each hub.

- **Five different hub models were tested**, with each hub leader recruiting and supporting between 20 and 33 schools. A number of successful characteristics emerged. For further details on all aspects of hub models see Section 6.7.
- **Hub leaders found the most effective approach** was to enable flexibility within **hubs** so that schools could collaborate on an equal footing and work in ways that best met local context, needs and challenges. The ‘beacon-cluster’ differentiation was sometimes perceived as unnecessary.
- **Hub leaders with excellent established local educational networks and experience**, supported by skilled school-based LINE leads, were central to the successful delivery of the model.
- **Hub leaders’ coordinating role within hubs** and LINE leads coordinating role within schools was critical to ensure project progress and sustain momentum.

4.3 Challenges of distributed project model

- **The time needed to recruit** and establish beacon schools and then cluster schools in sequence was longer than anticipated, taking an average of 6-12 months and covering a full academic year, so the project start-up phase was considerably longer than planned. The original target of 200 schools was revised to reflect this. 125 schools were recruited to the project.
- **The characteristics of a successful hub leader** became apparent during the project itself, so were not available to inform initial hub leader selection.

⁸ Higgins, S., Katsipataki, M., Kokotsaki, D., Coleman, R., Major, L.E., & Coe, R. (2014). *The Sutton Trust-Education Endowment Foundation Teaching and Learning Toolkit*. London: Education Endowment Foundation.

4.4 Summary of key findings and implications - distributed delivery model

- The **distributed model** of a central team supporting a network of hub leaders, who in turn supported groups of about 25 schools, can be very successful in recruiting schools and supporting them to deliver LINE.
- **Five different hub models were tested** and a number of common success criteria emerged. Model success relied on the coordinating role of hub leaders who had strong local educational networks, who were supported by school based LINE leads, and who enabled flexibility within hubs so that schools could collaborate and work in ways that best met local needs. A 'beacon-cluster' model was found to be too rigid.
- **The time needed to establish the distributed model** and recruit a hub of beacon schools and cluster schools in sequence takes at least 6-12 months, spanning a full academic year.
- Project delivery appears **highly cost effective**, at an average of £17.50 per pupil or £5,600 per school. It is estimated that if the distributed model were amplified, without the central costs associated with running a demonstration project, the delivery cost required would be reduced to approximately £1,000 - £1,200 per school per annum. This, however, does not include the in-kind support attracted by the demonstration project, any kind of central project management or any evaluation, which would realistically raise the costs to approximately £1,500 - £2,000 per school per annum. It also assumes approximately 20 schools in each hub.

5. Evaluation Design and Methods

As this was a demonstration, evaluation of the Natural Connections project was complex and wide-ranging. It had two principal aims:

- To evaluate whether and how the project was successful in stimulating LINE activity in project schools over three years (January 2013 – December 2015)
- To assess the impact of the project on participants.

This would allow return of evidence-led conclusions about the model and its replication, and this was balanced with the need to be manageable and realistic for schools. Reflecting the need for a comprehensive and responsive evaluation of the demonstration project, evaluation was embedded from the start of the project and was allocated approximately 20 per cent of the total budget.

The following sections discuss the evaluation design and instruments, data collection and analysis, and highlight the evaluation successes and challenges.

5.1 Evaluation design

The evaluation was designed around a framework (see NECR 215 Annex 1) developed and agreed between Natural England and Plymouth University. This was designed to support monitoring of key project processes, the relative success of each project element, degrees of change in LINE activity at school level, and to provide a comprehensive understanding of project development as a whole.

The framework enabled each of the four core project elements (brokerage, web service, volunteering and evaluation) to be systematically tested against a number of underpinning assumptions. One hundred key evaluation questions (KEQs) were designed to capture the scale, scope, processes and impact of the project, and to inform research design and data analysis. Summaries of the findings for each KEQ, in which the 100 KEQs are reported in 36 separate analyses, will be published and available in NECR 215 Annex 1. This report presents the key findings from the KEQs.

The complexity of the project, that had three aims, four core elements and a distributed model of responsibility in five areas across the South West, meant that a mixed method approach was most appropriate. According to Pommier et al (2010, p.3)⁹ this approach '(1) provides strengths that offset the weaknesses of both quantitative and qualitative research; (2) provides more comprehensive evidence for studying a research problem than either quantitative or qualitative research alone; (3) helps answer questions that cannot be answered by qualitative or quantitative approaches alone; (4) encourages researchers to collaborate; (5) encourages the use of multiple worldviews or paradigms; (6) and is 'practical' in the sense that the researcher is free to use all possible methods to address a research

⁹ Pommier, J., Guevel, M.-R. & Jourdan, D. (2010) 'Evaluation of health promotion in schools: a realistic evaluation approach using mixed methods'. *BMC Public Health*, 10:43.

problem'. The research design was that of triangulation (Pommier et al, 2010): its purpose was to obtain complementary data from different project sources in order to understand the project's design, delivery and impact as fully as possible, and to ensure the validity of findings, analysis and recommendations.

5.2 Data collection and management

Data collection instruments included:

Reflective surveys were used with:

- LINE leads in schools to capture school level information and longitudinal change with respect to LINE including perception of impact.
- LINE providers to understand their views, the nature of services provided to schools and any change.
- Volunteers, pupils and parents to gain their views of LINE.

Interviews were conducted with:

- Central team staff to understand project processes, successes and management of risk.
- Hub leaders to gain knowledge of hub developments. This included hub leader methods of implementation together with their successes/challenges and project adaptations to a fast-changing educational environment.
- School staff (including teachers, TAs and support staff), volunteers and pupils, all during case study visits. Interviews with individuals in case-study schools provided information to allow an understanding of LINE implementation in schools, including perceptions of and motivations for LINE activity.
- Farming and Countryside Education C.E.O. and the project's web development consultant to gain their views on the web service development.

Activity logs (a subset of the surveys) were used to capture a snapshot of activity twice a year (June and November) to understand longitudinal and seasonal change.

On-line data. Website analytics were used to monitor website, blog and Twitter use; Department for Education performance tables and school websites were consulted for background information on participating schools.

Figure 3 below provides an overview of the evaluation instruments designed to answer the KEQs set out in the evaluation framework.

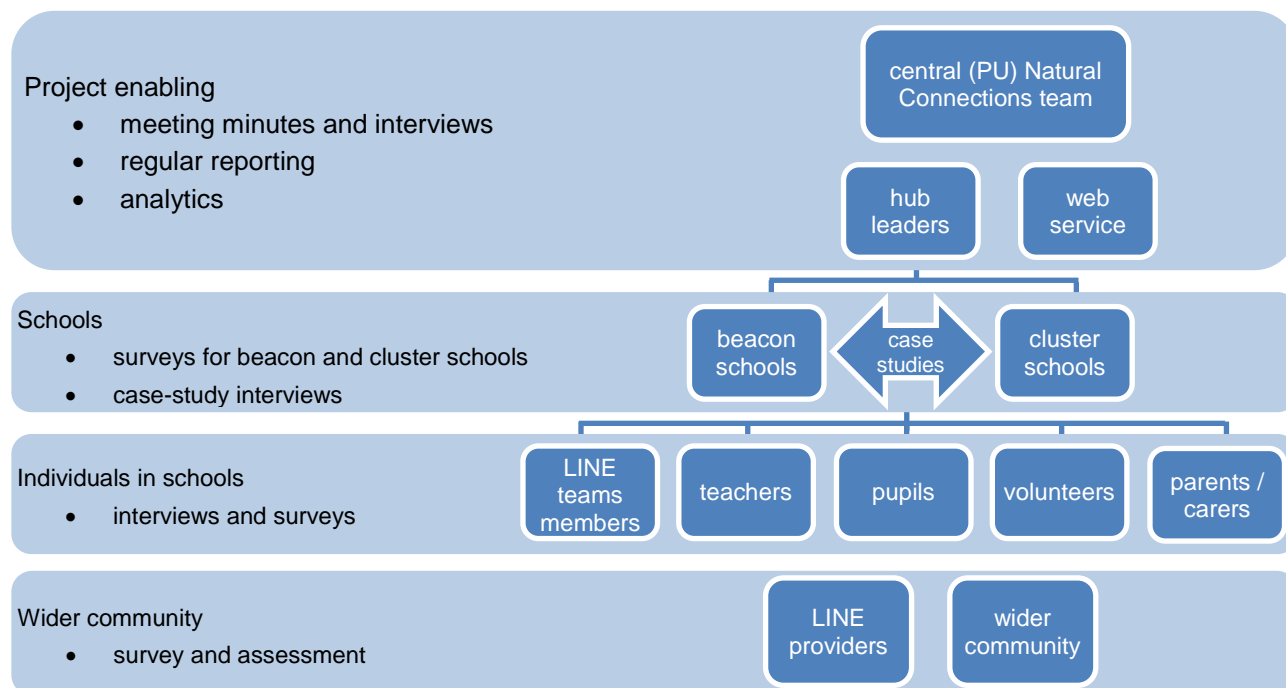


Figure 3: Overview of evaluation audience and research methods

Modifications to the data collection instruments were made during project delivery in response to:

- Feedback from project participants (e.g. reducing length of surveys).
- Low evaluation return rates (e.g. reducing frequency of activity logs and surveys).
- Project delivery and development (e.g. reducing hub leader interview frequency to capture change more efficiently).
- Data analysis (e.g. question refinement/replacement to better inform the evaluation).

Table 1 below sets out how the evaluation instruments were used to evaluate project scale, scope, impact and processes across the project elements of brokerage, volunteering, web service and evaluation.

Table 1: Research instruments

	BROKERAGE	VOLUNTEERING	WEB SERVICE	EVALUATION
SCALE	<ul style="list-style-type: none"> • hub leader (HL) interviews • school surveys • LINE provider survey 	<ul style="list-style-type: none"> • HL interviews • school surveys • school activity log (School AL) • school case studies (SC-Ss) 	<ul style="list-style-type: none"> • School AL • Google analytics • Hootsuite 	<ul style="list-style-type: none"> • central team instruments
SCOPE	<ul style="list-style-type: none"> • HL interviews • School AL • school profile information • LINE provider survey 	<ul style="list-style-type: none"> • HL interviews • School AL • SC-Ss • volunteer survey and interviews 	<ul style="list-style-type: none"> • School AL • SC-Ss • Google analytics • Hootsuite 	<ul style="list-style-type: none"> • central team instruments
IMPACT	<ul style="list-style-type: none"> • HL interviews • school surveys • School AL • SC-Ss • pupil and parent surveys • LINE provider survey 	<ul style="list-style-type: none"> • HL interviews • school surveys • School AL • SC-Ss • volunteer survey and interviews 	<ul style="list-style-type: none"> • HL interviews • SC-Ss • Google analytics • Hootsuite 	<ul style="list-style-type: none"> • HL interviews • SC-Ss
PROCESS	<ul style="list-style-type: none"> • HL interviews • school surveys • SC-Ss • central team instruments 	<ul style="list-style-type: none"> • HL interviews • SC-Ss • central team instruments 	<ul style="list-style-type: none"> • central team instruments • FACE interview • web consultant interview 	<ul style="list-style-type: none"> • HL interviews • SC-Ss • central team instruments

Data collected over 2½ years included:

- 3,083 survey returns from 15 different surveys to schools, volunteers, LINE providers, pupils and parents.
- 35 semi-structured interviews with hub leaders.
- 24 case-study visits to schools that included semi-structured interviews with 119 school staff, 11 LINE volunteers and 167 pupils.
- Notes and minutes from 52 central team meetings; 16 central team staff interviews.
- Monthly website analytics; semi-structured interviews with the Farming and Countryside Education C.E.O. and the project’s web development consultant
- Department for Education performance tables.
- Internet searches for school documents and information.

Surveys were initially hosted on a bespoke website as generic survey software did not have the complexity needed for recording all the requested information. However simplification of the survey requirements together with the need for greater flexibility in adapting surveys to project feedback meant that all surveys were transferred to SurveyMonkey software in 2014. Interviews were conducted face-to-face and transcribed into templates designed to capture the information needed. Qualitative survey data was coded thematically. Quantitative survey

data was cleaned and then given to the International Centre for Statistical Education (ICSE) at Plymouth University, where the statistical tests were carried out.

All survey data was used to calculate the proportions for comparison between different survey points; this approach was taken to ensure that no data was discounted and that comparisons were possible, as information was not available on all schools at the different survey points. Pearson's chi-squared test was used to assess changes in proportions over the course of the project. For the 'change in time spent on LINE' calculation, a non-parametric (Mann-Whitney U) test was performed on the baseline and May 2015 median of reports of time spent. The significance threshold for all tests was set at 0.05.

All summarised data and the results of the statistical tests were entered into QSR NVivo 10 software and coded against the 100 KEQs for detailed thematic analysis.

5.3 Successes in evaluation

- **Ambitious, effective data collection.** The collection of a large amount of data from a wide range of project participants has enabled a thorough understanding of the project processes, scale, scope and impact.
- **Flexibility.** The evaluation aims and instruments were refined in response to feedback.
- **Development of a suite of evaluation tools** for future project monitoring and evaluation. There is scope for these tools to inform progression of more standard evaluation approaches across learning outside the classroom in the natural environment. In the short term the tools were used to inform evaluation of the Naturally Healthy Devon Schools project (see Section 6.1).
- **Evaluation used as a tool to assist project delivery in schools.** Evaluation was assisted where baseline surveys were completed with each school as part of project recruitment and set up. This served to provide a school audit of LINE and the basis of a LINE action plan for future development. Schools also valued the qualitative elements of the evaluation to validate and promote their LINE work within the school and more widely. Hub leaders commented that case studies were '*used to showcase the work of schools*' and to provide practical examples of the work schools were doing, the challenges they faced and the impact of LINE on staff and students.

5.4 Challenges with evaluation

- **Evaluation of a demonstration project is complex** as it needs to gain an insight into the successes and challenges of developing new and innovative practice in schools.
- **Size and complexity** of the evaluation requirements at school level. These were scaled down in response to hub leader and school requests for the number and size of research instruments be reduced. Plans for additional school-based methods of evaluation were dropped when it was clear that priority needed to be given to ensuring completion of the core evaluation requirements.

- **Time taken for schools to submit data.** Repeated requests were often needed to remind and encourage schools to complete their surveys. Recognising the additional work load that this might require from hub leaders, this task was carried out by the central team research assistant, with support from hub leaders.
- A perception that the evaluation was an **additional/discretionary burden**, particularly at school level and among some hub leaders. This was for two reasons:
 - **Initial evaluation requirements** on hub leaders and schools meant that in many instances the evaluation was pitched as relatively low priority in comparison with the effort required to initiate, develop and support LINE in schools.
 - **The evaluation scope** required meant that much of the information generated was more immediately useful at project and hub level rather than at school level. The limited relevance of the evaluation data to school-level practice may have caused schools to question its value and reduce their engagement with the process.
- **Integrating the evaluation requirements** into a complex and demanding project delivery schedule was challenging. In retrospect, the evaluation could have been more clearly framed as a core element of overall project delivery at central, hub and local level so that expectations were clear.
- **Gathering LINE providers' views.** The diversity and number of LINE providers within the project area and the limited level of their involvement with project schools resulted in poor responses to LINE provider surveys. This constrained the project's ability to reach conclusions about their involvement or changes over time (see Section 6.7).
- **Gathering views of parents, pupils and volunteers.** It was only possible to survey these groups via schools. In case-study schools it was possible to carry out interviews, but in practice these were difficult to organise due to volunteer and parent availability. All schools were asked to post surveys on their school websites, but the response to this request was variable and the degree to which schools promoted the surveys was generally limited. This was not an effective way to progress evaluation with these audiences, not least as it assumes that school websites were accessed regularly by parents, pupils and volunteers. Nonetheless those schools that supported this part of the evaluation were keen to know the results for their own use.

5.5 Summary of key findings and implications – evaluation

- **Allocation of a significant proportion of the budget to evaluation** and the **development of an evaluation framework at the start of the project** were fundamental in the success of delivering and evaluating the demonstration project. These ensured the evaluation could enable project delivery to be responsive to ongoing findings, could generate deep insight into whether/how the project was successful and could assess the outcomes of LINE in schools.
- **Gathering data from schools required considerable effort.** This would have been assisted if evaluation had been framed at the start (with all hub leaders and schools) as an important tool in project delivery; for example, with baseline surveys promoted as a means for schools to audit their LINE activity and to inform the action planning needed to support them, and subsequent surveys promoted as a means to demonstrate and share progress with other schools.
- **At school level, evaluation should be simple** and linked directly to school priorities and planning to encourage participation. The evaluation should be designed and presented at the same time as the delivery and include more integrated and school-useful methods.
- **The suite of evaluation tools** developed for the project can be shared and used to help inform the move towards more standard evaluation approaches for LINE.

6. Results/Findings

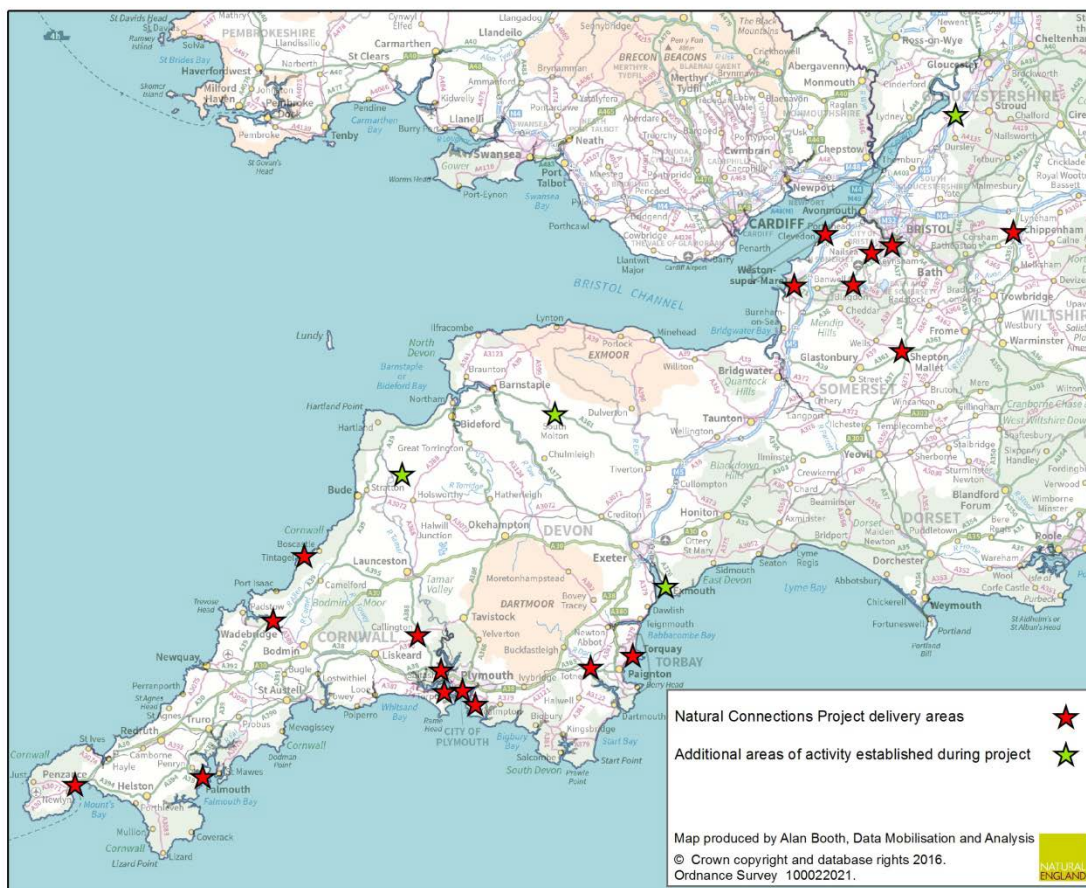
In this section we present the key findings from the evaluation on the effectiveness of the project in the delivery of its objectives. Information has been drawn from the evaluation tools and the Key Evaluation Question summaries and is discussed in the following sub sections:

- 6.1 Project scale
- 6.2 Project reach
- 6.3 Wider reach through communication activities
- 6.4 Project management
- 6.5 Central team
- 6.6 Summary of key findings and implications – project management at central team level
- 6.7 Brokerage – hub leaders
- 6.8 Summary of key findings and implications – project management at hub level
- 6.9 Volunteering
- 6.10 Summary of key findings and implications – volunteering
- 6.11 Participatory web service
- 6.12 Summary of key findings and implications – on-line activity.

6.1 Project scale

This section outlines the geographic scale of the project, the large number of participating schools and individuals, and the reach of the project.

Figure 4 below shows the areas of project activity across ten local authorities. The figure shows the wide geographic reach of the project but does not illustrate the concentration of schools involved in urban areas such as Bristol or Plymouth.



Red stars mark the Natural Connections project delivery areas.
 Green stars mark the additional activity established over the project.

Figure 4: Project areas

Hub leaders were selected and recruited to work in the local authorities of Bristol, Cornwall, North Somerset, Plymouth and Torbay. They also worked with schools outside these areas to capitalise on interest in the project in Bath and North East Somerset, Devon, Somerset and Wiltshire (marked by the red stars above).

Further funding was secured to develop a further two 'Naturally Healthy Devon Schools' hubs in North and East Devon, mainly funded by the Campaign to Protect Rural England (CPRE) Devon. In addition, the Wildfowl and Wetlands Trust 'Learning in Nature Collaboration' was established at the Slimbridge Wetland Centre in South Gloucestershire, with the help of the Bristol hub leader, and was informed by the Natural Connections hub model. The work of 'Naturally Healthy Devon Schools' and the 'Learning in Nature Collaboration' is outside the remit of the Natural Connections project and so not included in its evaluation, but locations are indicated by the green stars above.

6.2 Project reach: number of schools recruited and participation

125 schools were recruited across the five Natural Connections hubs and contributed to the project evaluation. The distribution of these schools across the project and their role is shown in Table 2 below.

Table 2: Number of schools recruited (n=125)

	Beacon schools	Cluster schools	Proportion of total project schools
Bristol	7	15	22 (18%)
Cornwall	7	13	20 (16%)
North Somerset	6	21	27 (22%)
Plymouth	7	26	33 (26%)
Torbay	6	17	23 (18%)
Total	33	92	125 (100%)

- DfE data¹⁰ show that the populations of the 125 participating schools were:
 - 2,531 teachers
 - 2,492 teaching assistants
 - 40,434 students.
- At least 325 volunteers were involved in LINE activity in the 125 project schools.
- Staff from a further 65 schools were involved in project activities such as hub leader meetings, working with one or more of the 125 project schools, or by attending a workshop, conference or other continuing professional development (CPD) opportunity.

6.3 Wider reach through communication activities

- Workshops at 116 events (including 28 national and international conferences) to an estimate of 4,000 people including academics, researchers, practitioners, students, school staff and policy makers
- 45 media articles published in local, national and specialist press and websites
- 18 editions of the project newsletter to a final distribution list of 1,589
- Three chapters in academic books; one article published in *Education 3-13*, another in *Education and Health*. One further article has been submitted to SAGE Online.
- Tweeted 3,750 times from the project Twitter account to a final list of 2,080 followers
- 21 articles on the Natural Connections blog. This has achieved 7,200 views from 3,550 visits (end February 2016).

¹⁰ Department for Education performance tables <https://www.gov.uk/school-performance-tables> (accessed 09.02.2016)

6.4 Project management

Total staff involvement

The total number of people directly involved in project delivery was a minimum of 500:

- A minimum of 200 people were directly involved in the project at central and hub level.
- School-based LINE teams involved a minimum of 300 people.

The budget for the staff resource is given in Section 9.

Central team

The central team had 11 members of staff working on the project. Two Plymouth University staff members were employed full-time initially (one for one year and one for six months) and then part-time; the rest were all part-time. Part-time posts ranged from 0.2 to 0.5 FTE, and their duration lasted between one year and three and a half years. Two FTE posts were seconded from Natural England.

- Project Lead (Associate Professor at Plymouth University, part-time)
- Project Manager (Delivery) (full-time initially and then part-time)
- Project Manager (Evaluation) (part-time)
- Research/Evaluation Assistant (full-time, on secondment)
- Two Project Delivery Assistants (part-time, on secondment from Natural England)
- Research Assistants x 2 (part-time in the first project year only)
- Volunteer Development Officer (full-time for nine months then part-time for six months)
- Administrative Assistant (part-time)
- Plymouth University placement student (full-time, one year)

Additional central project support was provided through:

- Natural England's Project Manager (part-time)
- Natural England's Project Advisory Board (meeting three times a year, included representatives from DEFRA, Historic England, Natural England, IBM and The Forestry Commission.
- IT consultant (part time)
- Web service team (see Section 6.11)
- Strategic Research Group for Learning in Natural Environments
- Other staff and students from Plymouth University supported project delivery at various points through a range of activities from specialist contract advice to devising project resources.

Hub leaders and schools

18 people from hub leader organisations worked on the project, all of whom were part-time with limited hours on the project. The flexibility of the model allowed hub leaders to allocate resources as they felt appropriate over the course of the project.

6.5 Central team

Central team responsibilities

- Key central team roles were in:
 - **project management and leadership**, in collaboration with Natural England
 - **recruiting, managing and supporting hub leaders**. This included:
 - signposting partnership, external CPD and funding opportunities
 - organising hub leader meetings and supporting communications between the hubs
 - running project-wide conferences and CPD sessions that were additional and complementary to hub offers
 - **leading project evaluation**: collecting, analysing and distributing research to support the hub leaders and beacon schools in their advocacy work, as well as reporting on the emerging findings from the Natural Connections evaluation throughout the course of the project
 - **advocacy, communication and dissemination**
 - **income generation**. The team were tasked with generating a target income of £69,625 for core project funding and £29,000 for web site development in collaboration with FACE.

Central team successes

- **Leadership and advocacy**: A Higher Education Institution was a recognised and respected centre for the project. Leadership and advocacy were enabled by the central team and further supported through the involvement of organisations on the Project Board such as Historic England, Forestry Commission, Council for Learning Outside the Classroom and Natural England.
- **Collaborative and participatory approach to project management and delivery**. Rigorous reporting procedures required by Natural England, whilst time consuming, enabled a partnership approach to the regular monitoring of project objectives and delivery. Day to day collaboration between Natural England and Plymouth University also enabled wider support and insight from the Project Board, Strategic Research Groups and other partners.
- Hosting the central team within a **large institution provided the flexibility** to draw on additional resources, which in this case included considerable additional staff support and research activity. The complexity of this project and its requirement to serve as a demonstration project required considerable in-kind staff support to be made available to the central team by both the commissioning body, Natural England, and by Plymouth University.
- **Added value**. £235,500 was contributed to the project through donated time, materials and resources (see Section 10).
- **The CPD offer developed and delivered by the central team** was well received. Themes were developed in response to a needs analysis and included fundraising,

teaching IT outdoors and 'Teach on the Beach', as well as two Plymouth University Master's modules in outdoor learning.

- **Project expansion.** The central team secured £48,000 to set up the Naturally Healthy Devon Schools project. The 'Naturally Healthy Devon Schools' project involved recruitment of one additional hub with three clusters. The Bristol hub leader also supported the development of the 'Learning in Nature Collaboration' with the Wildfowl and Wetlands Trust at Slimbridge Wetland Centre, drawing on their experience with Natural Connections.
- **Communications.** Central team members were able to present papers/workshops at regional, national and international conferences, and to write book chapters and contributions in a variety of practitioner journals and magazines. The project hosted a number of UK and of international visitors from the USA, Belgium, Italy, Norway, Denmark and Australia. All of these visited project schools to see their creative and innovative LINE work, took ideas back, and shared their own research and practice in outdoor learning with project participants.

Central team challenges

- **Building mutual understanding.** Considerable time was required to develop and agree approaches that met the needs of both Natural England and funders (for focused reporting on outputs and outcomes) and the project team working locally (to enable a flexible, developmental approach).
- **The complexity of this project** and its requirement to serve as a demonstration project required considerable additional in-kind staff support to be made available by both Natural England, and Plymouth University.
- **Responding to the evaluation.** As a demonstration project, additional time was needed to respond to significant formative evaluation findings and revise delivery plans, for example for the web service and evaluation elements and writing additional project documents (e.g. the project communications plan).
- **Income generation targets.** A target for the project to raise funding of c. £100,000 during the project was built into the central budget. The central team found that this required additional skills and resource to be brought in and competed with time and resource needed for other aspects of project delivery. The fundraising challenge was resolved in other ways (see Section 9).
- **Project schedule.** More time was needed at the start of the project/pre-hub leader recruitment to allow detailed planning of project delivery and resources. For example, very clear roles, expectations (outputs and outcomes), likely benefits, phasing, budget and evaluation requirements all needed to be agreed with hub leaders at the time of their recruitment.

6.6 Summary of key findings and implications – project management at central team level

- **A collaborative, partnership approach** was enabled and encouraged at all levels. This was critical to project success and enabled the project to bring in additional insight and considerable added value.
- **The planning for future large-scale, complex demonstration projects** needs to reflect the additional time and resources that is required for delivery, reporting and responding to formative evaluation. Project planning should also recognise the **time, resources and specific skills** needed to meet targets for income generation.
- **A flexible central team approach enabled project extension during delivery.** The central team secured £48,000 to set up the Naturally Healthy Devon Schools project as an extension of Natural Connections. The Bristol hub leader also supported the development of the ‘Learning in Nature Collaboration’ with the Wildfowl and Wetlands Trust at Slimbridge Wetland Centre, drawing on their experiences with Natural Connections.
- **Future amplification would require investment in central elements** associated with hub management coordination and evaluation.

6.7 Brokerage – hub leaders

Hub leaders and responsibilities

- **Five hub leaders were recruited after a selection process.** The selection was guided by a set of standard interview questions and criteria.
- **Hubs were all located in areas of deprivation** across a variety of different circumstances; two in densely-populated city locations (Bristol and Plymouth), one in a small local authority that had a roughly equal balance of urban area and green space (Torbay) and two in large, rural areas with long distances between schools (Cornwall and North Somerset). Hubs were selected by drawing on the Government’s 2010 indices of deprivation, and they demonstrated a wide variety of contexts and challenges to enable application of the results in similar contexts elsewhere.
- **Testing a variety of hub leader models.** All hub leaders had different organisational remits and all had their own individual approaches to school recruitment and support that were based on organisational capacity, location, areas of expertise and professional networks. Key characteristics and differences between the models are shown in Tables 3-7.

- **Hub leader roles were set out through a formal contract** and monitored at regular intervals. The contract outlined the following key roles for hub leaders as:
 - developing a coherent project delivery strategy for the hub
 - recruiting beacon schools and supporting recruitment of cluster schools as needed
 - supporting all schools directly and through brokering LINE services including CPD
 - ensuring communication between schools, hub leaders and the central team
 - visiting, commenting on and contributing to the project web service
 - supporting schools in recruiting and working with LINE volunteers
 - participating in regular evaluation interviews and ensuring data collection from schools
 - developing and testing a sustainable delivery model that would last beyond the three-year lifetime of the Natural Connections project.
- **Budget.** Hub leaders were each allocated £26,000 per annum for two years (i.e. a total of £52,000 per hub) to deliver the project. This was to cover their own costs and to support delivery with schools. Hub leaders allocated their delivery budget according to local needs, and funding was spent on staff, freelance fees, project delivery, CPD, grants to schools, office and travel.

Key characteristics of the five hub leader models

Table 3: Bristol hub leader model (Lighting up Learning, an educational consultancy)

Project strategy	Beacon school recruitment	Beacon school support	All school support
<p>Flexible, strategic approach in which hub leaders responded to their own reflections and school feedback to modify model. Were clear that recruitment target of 40 schools would not be met during project lifetime. Worked to create a cohesive model across the hub that had a common understanding of the aims of the project; developed a clear offer to all recruited schools that was based on a pedagogy in which LINE enhances teaching. Project branded as the 'LINE collaboration'.</p>	<p>Open call for applications; weighted scoring system to appoint beacon schools. Existing hub leader networks provided most applications. Seven beacon schools recruited that were evenly distributed over the different socioeconomic areas of Bristol.</p> <p>Seven beacon and 15 cluster schools meant a project total of 22 schools.</p>	<p>Face-to-face initial meetings, followed by further support with school needs articulated through action plans. Regular beacon school meetings. Commented on disparity of beacon school needs. Schools received funding for LINE development and supply costs for staff to attend meetings and/or continuing professional development (CPD).</p>	<p>Discarded individual beacon/cluster model early in project in favour of all beacons supporting all cluster schools; later this changed to a non-hierarchical supportive network. Regular hub-wide network meetings for all schools and LINE providers (held immediately after beacon school meetings). Developed formalised CPD programme in partnership with North Somerset hub, responding to school need. Annual LINE conference. Developed Wild Time for Schools on-line platform.</p>

Table 4: Cornwall hub leader model (The Learning Institute, an educational service provider)

Project strategy	Beacon school recruitment	Beacon school support	All school support
<p>Clear focus for project delivery with focus on creating sustainable systems. Adopted beacon/cluster model and tested this all through the project, with an emphasis on appointing a strong LINE lead in project schools. Believed the target for recruitment would be met after project lifetime. Clear project offer that was based on developing LINE in clusters of schools to benefit pupils. Aimed to find a balance between creating a cohesive project and allowing schools to develop their own LINE practice.</p> <p>Project branded as the 'LINE project'.</p>	<p>Targeted call for applications, followed by a weighted scoring system to finalise recruitment. The hub leaders' existing contacts provided most applications. Wanted to test project delivery through recruiting a representative sample of Cornwall's schools by size and sector. Discovered that a small school did not have the capacity to be a beacon school.</p> <p>Seven beacon and 13 cluster schools meant a project total of 20 schools.</p>	<p>Initial strong face-to-face support, then ongoing termly visits. Collective meetings half yearly were found to be challenging due to the distances involved for schools. Gave some direct support where needed to recruit cluster schools. Schools received funding for work linked to LINE development. Model moved away from the beacon/cluster structure towards a more general system of collaboration at the end of the project.</p>	<p>Main project support for cluster schools was through beacons, although hub leaders offered some face-to-face support. Leadership training was provided for LINE leads. Signposted to quality CPD opportunities such as Wild Tribe, although schools needed to sign up to an additional partnership to access this support.</p> <p>Signposted schools towards different LINE providers; believed that schools should learn to deliver LINE themselves and not be dependent on LINE providers. Felt that LINE providers should have had more training to support project.</p>

Table 5: North Somerset hub leader model (Forest of Avon Trust, a Bristol based charitable organisation with expertise in woodlands)

Project strategy	Beacon school recruitment	Beacon school support	All school support
<p>Responsive to individual school requirements. Quickly developed a partnership with the Bristol hub, and worked with them wherever possible. Recruited a high number of schools (27), but the majority were not strongly engaged with LINE or the project. Cluster schools were recruited by both hub leaders and beacon schools in tandem. Project offer emphasised the benefits of Forest School and school grounds improvement. Project branded as 'Natural Connections'.</p>	<p>Open call for applications. Disappointing response means that no scoring system was needed. Limited project interest in the original geographic hub area, so this was extended. Hub leaders did not have extensive existing education networks to support the recruitment process.</p> <p>Six beacon and 21 cluster schools meant a project total of 27 schools.</p>	<p>Initial face-to-face support. Beacon school meetings were organised but found to be challenging due to the distances between schools. Schools received funding for school grounds development and cluster recruitment. Support was intermittent at start of project while hub leaders waited for greater numbers to join the project, and interest from some schools waned.</p>	<p>Leadership of three mini-hubs in areas of stronger interest was devolved to partners from schools. Hub leaders worked to provide support with Bristol networks of a formalised CPD programme, annual conference and Wild Time for Schools on-line platform. Additional CPD support was provided for schools that were too far away to access CPD from Bristol. Hub leaders supported some cluster schools directly, which was time-intensive and resource-heavy.</p>

Table 6: Plymouth hub leader model (Plymouth City Council, the local authority for Plymouth)

Project strategy	Beacon school recruitment	Beacon school support	All school support
<p>The Plymouth team was the hub leader appointed first, and they developed several ideas used by other hub leaders (e.g. weighting system for recruitment and beacon school meetings). Theirs was the closest to the tender model, but it slowly moved towards a more dynamic, collaborative hub-wide approach. This hub recruited the highest number of schools (33). Offer clearly defined in terms of CPD, networking and resources. Project branded as 'Natural Connections'.</p>	<p>Targeted call for applications, followed by a weighted scoring system to finalise recruitment. Well-developed, existing hub leader networks and extensive knowledge of schools in the area supported the application process.</p> <p>Seven beacon and 26 cluster schools meant a project total of 33 schools.</p>	<p>Face-to-face support and initial networking beacon school meetings. Schools received funding for grounds development and joint school LINE activities. Brokered school grounds support from the Devon Wildlife Trust.</p>	<p>Overarching network open to all including LINE providers; some strong relationships between beacon and cluster schools developed. CPD provision based on in-house expertise (e.g. in woodland development), but offer widened with development of partnerships and overview of school need. Members of the Plymouth hub team took an individual approach to supporting beacon schools in accessing CPD, based on school need and directly linking schools to providers as necessary.</p>

Table 7: Torbay hub leader model (Real Ideas Organisation, and independent community interest company with expertise in social enterprise in schools; Mel Easter, retired headteacher with extensive knowledge and experience of LINE)

Project strategy	Beacon school recruitment	Beacon school support	All school support
<p>1st hub leader (HL1): planned to build on existing interest and expertise to effect whole school change in a small number of schools. Responsive to individual school needs through the LifeLINE CPD network, but less responsive to other project requirements. Project identity was the LifeLINE CPD network, which was attended only by schools interested in LINE.</p> <p>2nd hub leader (HL2): flexible, pragmatic approach which aimed to bring schools together to develop a sustainable network of schools engaged in the development of LINE practice. Project re-branded as ‘Natural Connections’.</p>	<p>HL1: Discussion with interested schools, with the aim of recruiting them gradually to the project. Hub leaders had strong links with a small number of schools but no wider networks in the area.</p> <p>Six beacon and 17 cluster schools meant a project total of 23 schools.</p> <p>Note: Of these 23, ten cluster schools were recruited by HL2 between November 2014-March 2015</p>	<p>HL1: strong support offered through the LifeLINE network and individual discussions for small number of schools. Funding available for grounds and LINE activity development, and cluster recruitment.</p> <p>HL2: introduced beacon school and wider networking meetings; used evaluation baseline survey as means of auditing levels of newly-recruited schools’ LINE activity and developing ways to progress.</p>	<p>HL1: through LifeLINE network but this was not inclusive or flexible for schools that were undecided about LINE.</p> <p>HL2: wider network meetings, signposting to CPD, funded places on specific CPD for schools, development of resources by schools for schools, links with local curriculum network and LINE providers.</p>

Hub leader successes

- **Working with schools.** Hub leaders were most successful in recruiting and supporting schools where they had excellent existing networks with schools and the project aims aligned with their own organisational aims and values. The first hub leader for Torbay withdrew from the project as they decided during the project that the Natural Connections project aims were not sufficiently aligned to their own core organisational aims. They were unable to provide the capacity and flexibility needed to deliver the project. A second hub leader was recruited.
- **Recruiting schools to the project.** Recruitment was defined as school completion of a baseline survey. 121 schools were recruited according to this criterion; another four joined later and so only completed subsequent surveys and have been included in the evaluation, making the total number of recruited schools 125. A further 65 schools participated in project activities but were not interested in contributing to the evaluation, so data was not collected from these schools.
- **Relationship-building.** Hub leaders were critical to the success of the project; so it was essential that they were professional, personable and committed to spend time in building positive and lasting relationships with and between different schools.
- **Adding value.** The most effective hub leaders had a strong alignment between the project aims and their organisational aims and values and used the project as an opportunity to grow and consolidate their services. Hub leaders worked to a very limited budget and those with a strong alignment with the project's aims were able to justify contributing additional value from their own resources, as it was in their long term organisational interest. This is demonstrated in the significant increase in the scale and scope of LINE activity (see Section 7).
- **Flexible hub modelling.** No one hub model emerged as a blueprint. In fact, the diverse ways in which LINE was supported via the different hub leaders highlights the importance of enabling flexible hub leader roles that can respond to local priorities, interests and challenges to LINE in schools.
- **Thorough understanding of school challenges to LINE.** Hub leaders worked to understand school challenges and to overcome these challenges in a variety of different ways that were tailored to the schools in their area (see Section 7.3). Hub leaders spent the majority of their first year working individually with relatively small numbers of beacon schools to identify their priorities and to design a model of LINE implementation that worked for them in managing and overcoming challenges to LINE.
- **Supporting collaboration and participation.** Schools across all hubs reported that they valued the networking and CPD opportunities offered and/or arranged by the hub leaders, and that these provided peer and other support and training; hub leaders also reported that they appreciated the hub leader meetings where they could share experiences and ideas. These are reflected in the following comments:
 - *'valued highly ... the space and time to talk and spark off each other and go away enthused'* (survey comment)

- *'I really appreciate having the support - I would feel much more isolated without Natural Connections there, ready to help in whatever way they can'* (survey comment)
- *'(Hub leaders) provided opportunities for CPD and sharing best practice for outdoor learning'* (survey comment).
- **Beacon schools reported high levels of satisfaction** with the project. In the July 2015 survey, 21 of the 27 responding beacon schools indicated that the project had been either 'very effective' or 'effective' in helping them overcome challenges to LINE. Hub leader interviews demonstrated that this was due to the high levels of support beacons received from hub leaders, their relationship with their hub leader, the new opportunities the project offered and their secure understanding of the project.
- **Supporting sustainable models of LINE delivery** in hubs. All hubs had plans in place to continue their LINE work after the end of the project.
- **Supporting sustainable models of LINE delivery in schools.** An analysis of school and hub data across six criteria suggested that around a third of schools had securely embedded LINE into their planning and practices. The current project lifetime was too short to allow proper testing of sustainability in schools, so resources have been committed by Natural England and Plymouth University to survey schools and hub leaders again in 2016 and 2017.
- **The number of organisations and individuals engaged.** This general willingness to get involved in the project demonstrates a strong belief in the power of LINE to improve the quality of children's lives.
- It was found that hub leaders provided **support for schools** in the following broad areas:
 - **regular visits** to beacon (and some cluster) schools. These visits discussed school needs, staff CPD requirements, LINE strategy, LINE action plans and the resources needed to address these.
 - **small grants** (£500 - £1,000) to beacon schools to support their own LINE needs, such as purchasing outdoor equipment, playground improvements, buying in expertise and children's outdoor clothing. Grants were not usually available to cluster schools.
 - **signposting support for school grounds development.** The aim of this was to engage beacon staff and pupils with the idea and practicalities of LINE, to ensure grounds were suitable for increased levels of LINE, and to enable beacon schools to feel confident in inviting colleagues from other project schools onto their site.
 - **LINE CPD opportunities.** Formal and informal opportunities for all schools and LINE providers across a range of topics and priorities: regular school and LINE provider networking opportunities (informal CPD) and organising/ delivering tailored CPD sessions, workshops and conferences for schools (formal CPD). The CPD programme proved core to cultural shift in schools. The CPD programme was based on:
 - regular, evolving, flexible and responsive CPD opportunities
 - developing knowledge, understanding and practice of LINE and

focusing on a shift in beliefs, assumptions and attitudes amongst teachers through practical experience and observation of impact on students' learning: *'seeing it work and making a difference'* (survey comment)

- formal and informal opportunities to talk and receive feedback with peers in a friendly, mutually-supportive atmosphere
 - collaboration with colleagues and external experts who could challenge practice, advise and celebrate achievements
 - building confidence in the efficacy of LINE, thereby supporting staff members' efforts to embed LINE, and to shift the school teaching and learning culture to one that embraced LINE
 - addressing practical challenges such as funding, grounds development and health and safety requirements.
- **resources**, including printed and digital/on-line LINE resources, directories of providers and guidance on working with LINE volunteers. In addition hub leaders acted as knowledge banks for access to a wide range of physical and intellectual resources.
 - **brokering relationships** between schools and strategic partners to facilitate sustainable working with volunteers. These included volunteer bureaux and environmental charities.
 - **investigating and testing mechanisms for on-line support**, for example through the Growing Schools website, Twitter, email and blogs. The development of the 'Wild Time for Schools' on-line platform, devised and developed by the Bristol and North Somerset hub leaders in partnership with The Wild Network¹¹, was created to inspire and support teachers with their LINE activities.

Hub leader challenges

- **Hub leader capacity.** Limited resources meant that hub leaders had to focus on the fundamental aspects of school recruitment and school LINE support, and they made choices about how much effort could be allocated to other project elements. All made considerable efforts to engage with all elements of the project, but many felt they had limited capacity to contribute effectively to the volunteering, web service and evaluation elements. This had implications particularly for testing the volunteering and web service elements (see Sections 6.9 and 6.10). Hub leader organisations with only one or two members of staff faced most challenges in terms of capacity to deliver the project, especially when there were unexpected periods of absence. This should inform hub leader selection.
- **School recruitment.** All hub leaders experienced considerable challenges with meeting the original recruitment target of 40 schools each in the timescales set by the central team, and commented that this was unrealistic. Another important

¹¹ <http://www.thewildnetwork.com/>

observation was the *'tension'* between the requirement to recruit 40 schools quickly and the time it took *'to engage schools'*. New, more realistic targets were agreed with the central team; final numbers recruited are given in Tables 3-7. Two hub leaders with the lowest numbers of potential schools in their catchments (Torbay and North Somerset) reported that 40 schools was a particularly challenging target in these circumstances. Table 8 below shows the total numbers of potential schools in all hubs. The relatively long travelling distances between schools in rural areas imposed additional challenges to recruitment. The use of a Memorandum of Understanding with schools to set out expectations was tested but this proved to be more of a barrier than an enabler to schools joining the project.

- Additional challenges were experienced in **recruiting secondary schools** to the project, due to constraints of the secondary curriculum and the need to work with a much larger staff cohort. However, nine secondary schools were recruited to the project. In Cornwall three of the seven beacon schools were secondary schools, reflecting the hub leader's networks and area.
- **Slow school recruitment** also had a knock on effect on:
 - the testing and delivery of the volunteering element (see Section 6.9)
 - the length of time over which data could be collected from schools (see Section 5).

Table 8: Number of potential project schools in hub areas

	State funded primary	State funded secondary	State funded special	Total state funded schools
Bristol	104	22	9	135 (22 recruited*, 16 per cent of total school population)
Cornwall	235	32	4	271 (20 recruited, 7 per cent of total school population)
North Somerset	61	11	3	75 (27 recruited*, 36 per cent of total school population)
Plymouth	68	18	7	93 (33 recruited, 35 per cent of total school population)
Torbay	30	9	3	42 (23 recruited*, 55 per cent of total school population)
Total	498	92	26	616 (125 recruited*, 20 per cent of total school population)

*Note: not all schools recruited were within hub local authority areas

- **Time needed to develop school commitment** to and investment in LINE. This underpinned the struggle to recruit target numbers of schools within the time set. Recruitment of cluster schools could only happen once beacon schools were recruited and supported to the point when they had the confidence and expertise to support other schools.
Preparing beacon schools to take on the role of ambassadors for the project and to start to reach out to cluster schools took between six and twelve months rather than the original three months that was initially planned. However, this timescale was closely related to a full academic year and the need to integrate LINE into school planning, with the result that some beacon schools took more than a year to establish their practice. The optimum time to recruit and engage schools was the summer term, so that they could integrate LINE into their planning for the new academic year. Planning for LINE through action plans and/or integrating into existing school plans was important in providing a sense of direction and purpose for schools.
- **Recruiting cluster schools** was challenging, as these schools tended to start from a lower level of awareness and commitment to LINE and took longer to appreciate the benefits of joining the project. The time taken to recruit cluster schools depended on the quality of relationship between cluster schools and the recruiting body (either beacon school or hub leader) which, in turn, depended on existing school relationships, schools' location and the confidence and influence of the LINE lead. Cluster school recruitment was ongoing in the project until March 2015.
- **Beacon/cluster model.** The beacon/cluster model relied on some schools being prepared to become 'beacons'. Some schools were uncomfortable with the perceived hierarchy of this model or lacked the confidence and/or capacity to be designated a beacon school. In addition:
 - all hub leaders could cite cluster schools that were more advanced in their LINE practice than some beacons but had not put themselves forward for this role.
 - the beacon/cluster model worked more successfully in rural areas where schools were in close proximity and/or where schools had existing relationships (as in Plymouth), and there were examples of thriving clusters in which a beacon school had engaged productively with one or two other local schools.
 - schools varied in their ability to invest time and resource in building LINE relationships for many reasons including the prospect/results of an Ofsted inspection, conversion to academy status, staff turnover, and local and/or national curriculum agendas.
 - the challenges of developing confidence in beacon schools' LINE leads so that they could support cluster schools with LINE.
 - dispersed levels of LINE expertise among beacon schools and a reluctance for some beacon schools to be seen as 'experts'.

For all the above reasons all five hubs moved away from the original beacon-cluster model towards a hub-wide, responsive model of networking and collaboration. This enabled a more flexible approach, tailored to individual local circumstances. This

hub-wide model also enabled schools to have access to a wider pool of expertise. However it is likely to require ongoing coordination by hub leaders for the collaboration to be sustainable.

- **Sustainability of networking.** Some hub leaders investigated the prospect of beacon schools taking on the responsibility for hub management. In general, however, schools lacked the capacity to administer this and expressed a desire for hub leaders to continue in the organisational role. Special and secondary schools experienced greater difficulty in networking within hubs because of the relatively low numbers of schools of this type recruited to the project. Support for LINE networking among schools requires ongoing coordination at a local level, and hub leaders developed and are currently testing models for sustaining LINE networks as part of their core activities (see Section 11).
- **Engaging LINE providers.** Hub leaders reported concern over the equity of recommending one LINE provider over another without a transparent quality assurance process, and they often felt they had an incomplete knowledge of available local providers and offers. The result was that the brokerage of LINE provider services tended to be through open invitations to regular hub network meetings or word of mouth. It also became clear that schools, at least in the initial stage of LINE development, only required support to build confidence to deliver LINE within school grounds through in-house provision and CPD. Where LINE providers offered this, their services were facilitated through the brokerage.
- **Managing communications.** The central team communicated regularly with hub leaders and schools, which included wider information (such as local provider and CPD events) and project feedback. Hub leaders recognised the potential for school information overload very quickly, and the volume of information meant that both hub leaders and schools ended up prioritising requests and information according to their own capacity and needs. Two hub leaders opted to be the only conduit for project information to schools; the remaining three managed central team information but also allowed the central team to contact schools directly when necessary. There was no clear difference between these two approaches in terms of school response to the evaluation requests.
- **Limited budget for project delivery.** Hub leaders considered budget allocations carefully in order to maximise impact, and in some instances contributed additional in-kind time and resources from their own organisations and partners. The scale and scope of the project were ultimately defined by the resources available at central team and hub level.

6.8 Summary of key findings and implications – project management at hub level

- **The hub model was successful** in recruiting schools, supporting them to develop LINE practice and to test sustainable models of delivery.
- **The range of characteristics that supported successful hub leader delivery** included:
 - sufficient hub leader capacity
 - alignment between project and hub leader organisational aims
 - a thorough understanding of the education system
 - excellent networks with schools and LINE providers
 - sufficient organisational capacity and reach to take on project work
 - budgets linked to clear outcomes and output targets
 - willingness to offer added value where appropriate.

The hub leaders that had high levels of enthusiasm for LINE and excellent educational networks were the most successful.

- **12 months was needed to recruit and build effective relationships** among a hub of beacon and cluster schools. Considerable time and support was required to enable beacon schools to become confident enough in their own LINE strategies and practices before engaging cluster schools. On average, this took six to twelve months. This process needs to be aligned to the academic year to allow schools time to integrate LINE into school planning, with the optimum time to recruit and engage schools being the summer term, so that they could integrate LINE into their planning for the new year. These findings reflect the project's aim of delivering a cultural shift within schools dispersed over a large geographic region.
- **Hub leader school recruitment and delivery strategies should:**
 - plan for a phased school recruitment over 12 months.
 - target schools that show an interest in developing LINE, in order to create an active, confident cluster of schools to act as ambassadors. This will include schools with varying levels of existing LINE activity. School enthusiasm to do more and a willingness to collaborate were key to success
 - offer CPD support to schools early after recruitment.
 - move towards a flexible hub model without differentiation into beacon or cluster with hub leaders supporting all participating schools equally.
 - coordinate hub level school networking and sharing. This was an essential element that could potentially be supported locally by Teaching Schools and schools experienced in LINE with hub leader support.

Table continued...

- use evaluation tools to audit and develop LINE action planning clearly linked to school priorities and rationales for school improvement.
- ensure LINE leads within schools have the support of senior management and understand how to encourage LINE as a means of addressing school improvement. CPD to support leadership skills for LINE leads would help develop capacity to drive LINE adoption and good practice.
- ensure a mechanism for school successes and experiences to be shared quickly across the school, locally and across wider networks to optimise learning. Face to face networking opportunities were an essential component of developing LINE practice, as was the importance of experiential learning.

6.9 Volunteering

The aims for the volunteering element were:

- To test if lack of volunteer support was a barrier to LINE in schools.
- If so, how that might be overcome by offering support for volunteer development.
- To add insight around the type and scope of roles that were required.

Volunteering need

Reflecting findings of the insight research¹² that shaped the Natural Connections project, a lack of volunteer support was one of most frequently indicated challenges to LINE in schools. The percentage of schools that agreed this was a challenge reduced over the life of the project from 42 to 33 per cent. This is discussed, alongside other challenges, in Section 7.4.

Scale of volunteer involvement in LINE

Volunteering culture in project schools was not well developed and it was clear that school engagement with different types of volunteering was not always consistently recognised or reported as volunteering. For example, several schools that reported no volunteer involvement in the surveys described some voluntary activity during case study interviews. This reflects the finding from the research commissioned to inform Natural Connections' volunteering element¹³; that where volunteering does take place in schools, it is rarely recognised or managed as volunteering.

It also became clear that asking schools to provide retrospective data on hours contributed by volunteers was likely to be unreliable, due to school capacity and varying levels of understanding of volunteering. Data collection therefore focused on the number of volunteers; while this yielded more accurate data, the same inconsistencies relating to

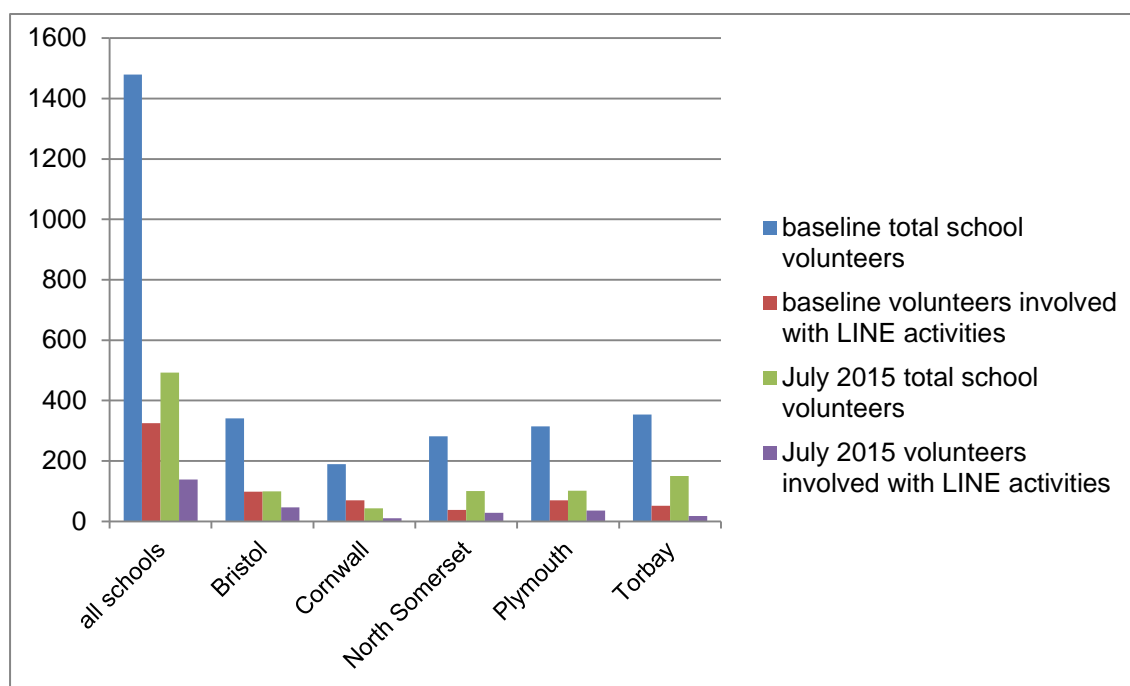
¹² Rickinson, M., Hunt, A., Rogers, J. & Dillon, J. (2012). *School Leader and Teacher Insights into Learning Outside the Classroom in Natural Environments*. Natural England Commissioned Reports, Number 097.

¹³ Unell, J. & Castle, R. (2012). *Developing sustainable volunteering within the Natural Connections Demonstration Project: a review of evidence*. Natural England Commissioned Reports, Number 096.

volunteering recognition applied. As a result, it is particularly difficult to draw conclusions about project impact on the scale of volunteer involvement.

Over the project period schools reported a marked drop in the total numbers of volunteers involved in schools. The number of volunteers involved in LINE also fell during this period from 325 to 138, a 58 per cent decrease (see Figure 5 below), a trend that was reported in all hubs. It is beyond the scope of the project to interpret this.

However the data also shows a significant increase in the proportion of volunteers reported by schools who were involved in LINE over that time, from 22 to 28 per cent (see Figure 7, Section 7.2). This increase could reflect factors such as a shift in focus for existing school volunteers to LINE (information from case study schools suggested this may have been the case), a greater contribution from fewer LINE-skilled volunteers, or a reduction in schools' real or perceived reliance on volunteers as teachers developed their own skills to deliver LINE within the school grounds.



Baseline n=121: Bristol n=18, Cornwall n=20, North Somerset n=27, Plymouth n=33, Torbay n=23
 July 2015 survey n= 84: Bristol n=16, Cornwall n=12, North Somerset n=14, Plymouth n=25, Torbay n=17

Figure 5: Number of volunteers in schools: total and those involved in LINE delivery

Scope of volunteer roles

Volunteers were reported as performing a number of broad roles:

- **Enablers** with skills and ability to influence the development of LINE in schools.
- **Experts** with specific skills and specific responsibilities, such as for gardening/animal husbandry, but in general this activity was led by teaching staff within the school.

- **Assistants** to provide suitable adult: pupil ratios for off-site trips and more hazardous activities in school grounds, as well as improving the experience by allowing children to work in smaller groups.
- **Grounds developers/maintainers.** These were volunteers who were unable to support LINE activity during the school day but contributed skills and time to school ground provision.

Support for volunteer development

Support for volunteer development was provided by both the central team and hub leaders. The central team Volunteer Development Officer provided/developed guidance for schools on working with volunteers on LINE activities.

The hub leaders were all able to support volunteering to some degree, although all attached different levels of priority to the volunteer element of the project for reasons discussed in the challenges section below.

Between them, the hubs tested a number of ways to broker volunteer engagement. These included:

- **Recruitment.** Schools were supported to recruit volunteers directly via their own contacts, through relationships brokered by the central team or hub leaders (including with other volunteer involving organisations to share volunteering opportunities) and through strategic partnerships developed by the project with local volunteer bureaux.
- **Training.** CPD was provided for potential volunteers wanting to work in schools. One hub began exploring accreditation for volunteers but had insufficient capacity to continue this work.
- **Management and coordination.** Hubs organised beacon/cluster school network events to discuss volunteering, sometimes with external input.

Successes with volunteering

- The proportion of schools agreeing that the **lack of volunteers was a challenge reduced over time**, from 42 to 33 per cent (see Section 7.4).
- There was a **significant increase in the proportion of volunteers** reported by schools who were involved in LINE, from 22 to 28 per cent.
- **Existing volunteers were supported** to carry out new LINE roles. Several case-study schools had a long history of engaging with and managing volunteers, and were able to shift the focus of volunteering roles to support new LINE activities. No training need for this was reported.
- **Schools can offer a range of LINE volunteering** opportunities and roles, including one-off and more regular opportunities both to individuals and groups. Roles included support for events, managing gardens, supporting activities such as Forest School or gardening clubs, and timetabled outdoor learning sessions.
- **Volunteering could encourage parental involvement** in schools. This emerged from case studies, with one case study school citing LINE volunteering as *‘the magic*

ingredient' to encourage parents to engage with the school. 'Outdoor Learning' days and/or 'Empty Classroom Day' events, where parents and local residents were invited to help across the school, proved successful with a number of schools and generated more volunteer help.

- **Working in partnership with volunteer bureaux.** The most promising approach to supporting hub-wide volunteering emerged as working with volunteer bureaux that already had an active interest in supporting volunteering in schools. However, an academic year was found to be a realistic timescale for allowing bureaux to fully understand schools' needs and for schools to understand bureaux systems.

Challenges to volunteering for LINE

- **School confidence.** In general, schools new to volunteering needed to become confident in their own LINE practice before engaging volunteers in LINE. For this reason, future projects should consider flexible phasing of support for the volunteering element.
- **Central and hub leader capacity.** Reflecting the timescale needed to recruit and support schools to build their own confidence in LINE, the volunteering element proved difficult to initiate and sustain at the start of the project. Unfortunately, this was when the Volunteer Development Officer was in post. In addition hub leaders found they had insufficient capacity to drive this project element alongside other commitments. One hub consistently tried to develop volunteering but with limited results and two others felt they did not have the capacity to support volunteering. To allow some focused testing of this element, the two remaining hubs (Bristol and Plymouth) were allocated small additional amounts of funding to explore the volunteering element more thoroughly. Bristol hub findings included:
 - schools were not used to thinking '*volunteer*' but commonly worked with people who volunteered their time including parents and grandparents.
 - schools needed support to become more focused in how they recruited volunteers in terms of skills, sustained involvement, time and experience.
 - some schools found they already had enough capacity within their parent volunteers to support delivery of LINE.
 - complex communication routes between schools, agencies and potential volunteers hindered the recruitment process.
 - schools found it difficult to engage volunteers from external organisations, often due to differing motivations and communication channels.
 - training teachers in good volunteer management practice will be important to underpin future LINE programmes.

Additional findings from the Plymouth hub showed that a group of volunteers to support LINE in local greenspace across a number of local school catchment areas would need ongoing support to make it sustainable.

- **Working with other organisations.** The central team and hub leaders tried to engage local environmental organisations with a public/educational remit to discuss whether their volunteers might also be willing to help with outdoor learning in project

schools. This had limited results, largely due to capacity restraints within these organisations.

- **School capacity.** Hub leaders reported that schools were keen to work with volunteers. However most schools did not feel they had the staff capacity or confidence to undertake volunteer coordination: '[staff in schools are] *already busy people and that's what's articulated to me wherever I go*' (hub leader). This is common in the early stages of many volunteer development programmes¹⁴ and suggests there was a need for more focused volunteer development programming at a local level and at the right stage in delivery to test this element properly. This could be the subject of a future project.

¹⁴ Unell, J. & Castle, R. (2012). *Developing sustainable volunteering within the Natural Connections Demonstration Project: a review of evidence*. Natural England Commissioned Reports, Number 096.

6.10 Summary of key findings and implications – volunteering

- **Schools should be supported to identify the scope** of their volunteering opportunities as part of their initial LINE audit and action planning for LINE. This information could then be used by hub leaders to inform local and hub-wide volunteer recruitment strategies to meet school needs.
- **Project resource for supporting volunteering at central and hub levels should be flexible**, so that this becomes available to schools once they have had time to build their own confidence in LINE, have identified volunteering needs and are ready to consider the additional demands of volunteer recruitment and management. Development of strategic relationships with other volunteer-involving organisations and volunteer bureaux, plus collation of generic volunteering support and management resources would be useful in the initial school recruitment phase.
- **Volunteering culture in project schools was not well developed.** A volunteer development approach, that includes CPD in volunteer management, use of exemplar policies and good practice guidance to inform action planning and delivery, should be adopted in future projects.
- **A hub leader role to emerge was the brokering of volunteer support** through development of strategic relationships with volunteer agencies and bureaux.
- **Engaging with other volunteer-involving organisations**, for example those in the heritage and natural environment sectors, might be assisted by framing school volunteering support within a wider engagement strategy. This may include delivery of LINE services to schools and membership recruitment.
- **One-off volunteering opportunities marketed as events** proved successful, for example, in giving parents and local residents the chance to come and help across the school. These events achieved a great deal in a short time and offered schools the opportunity to recruit regular volunteers and perhaps to start intergenerational volunteer programmes.
- **There was a small but statistically significant increase in the proportion of total volunteers** reported by schools who were involved in LINE. Due to a number of factors including the delay in school recruitment, it was not possible to properly test the potential for volunteering to support school LINE. Evidence from this project confirms that this is an area of interest and relevance to LINE and could be further studied. However, it will be important to work with schools to support them to capture more extensive information on volunteering, including volunteer roles, numbers and hours contributed, and training. Ensuring schools have the capacity to do this is likely to be an issue.

6.11 Participatory web service

This element of the project aimed to test the assumptions that teachers needed and would use a participatory web based service as a tool to find resources and as a community of support for LINE. The project plan for the service was for a content-based website and a discussion forum for teachers and others interested in LINE, both supported by social media.

Approach for content-based web site

An IT consultant supported the production of a brief for the tender for the web service element. The tender was awarded to Farming and Countryside Education (FACE) who managed the existing Growing Schools website. The intention was to use this site as the platform for further development and for this to become the core of the participatory web service and to cover all required aspects of LINE support, including lesson plans, ideas for activities, and a directory of LINE providers, events listings, case-study videos and a database of locations for LINE. The aim was that schools and organisations associated with the project would contribute content to the site by uploading their experiences / resources / details to provide a dynamic, content-rich site that would provide a one-stop shop for information and advice on school LINE activities.

Approach for discussion forum

Rather than launching a new discussion forum, the project team tested the scope to use existing, albeit rather limited teacher interest in the Times Educational Supplement (TES) Outdoor Learning Forum.

Approach for social media

Early in the project a Facebook and Twitter account were set up (@ntrlconnections) to promote the project and signpost to the website.

Revised approach

Ongoing evaluation raised hub leader, school and LINE provider concerns about the ability of the Growing Schools website to meet project needs. It was difficult to encourage schools and other participants to contribute to the site, with the result that the content remained static and did not evolve in the way that was intended to generate increased use and value. There were also concerns over quality assurance of content, particularly around LINE provider listings, and the navigability and responsiveness of the site. In addition there was some tension between the national reach of the website and the need for local information that was focused on project areas and project delivery. As a result, and with Natural England's agreement, the project ceased investment in the Growing Schools website in September 2014, leaving a limited amount of funding to resource an alternative.

At this point the aspiration for testing on-line activity was reviewed to consider how to best use the remaining resources for project and legacy delivery. The review recommended focusing on a cross-platform on-line presence, with flexible products such as infographics and micro-videos, alongside a collaborative blog that would include targeted communications and continuation of the Twitter account. Wider aspirations around

discussion forums and social media were dropped. The project continued their relationship with FACE by becoming a founder member of the Countryside Classroom website that was developed by FACE. This has continued the aspiration for a 'one-stop shop' for educators who wanted information on learning outdoors.

Challenges to on-line activities

- **Growing Schools website.** The Growing Schools website failed to deliver the sort of platform or service that would develop or test the idea of a 'one-stop shop' for schools or foster a community of users, for the following reasons:
 - **quality and technical design.** Hub leaders' concern about the Growing Schools website meant they were not prepared to encourage project participants to invest their time to contribute to it. In particular, hub leaders, LINE providers and teachers commented that site navigation and database of resources were poor; information upload was difficult, there was no process for feedback on experience with the website and there was no provision for local content. The content remained static and did not evolve in the way that was intended to generate increased use and value.
 - **lack of a coherent, funded marketing plan.** This contributed to the site's low use. Although visitor numbers to the revised Growing Schools site rose to a peak of over 4,000 visitors in December 2013/January 2014 from pre-project figures of around 1,000 visits per month, traffic was not high enough to create momentum and a community for the site.
 - **lack of focus for developing on-line strategy.** A clearer strategic focus would have resolved some of the conflicts of trying to deliver multiple services (practical resources, information, evidence) to multiple audiences whilst at the same time providing a focal point for the local delivery of Natural Connections. Hub leaders reported that they needed on-line communications that were closely focused on project areas and project delivery, and over which they had more control. Project resources could not enable this.
 - **lack of capacity.** Teachers had limited capacity to contribute to the development of new resources or discussions whilst developing their own new LINE practice.
 - **individual approach to accessing information.** In practice teachers accessed information in a varied and dynamic way including a range of on-line sources.

These factors led to the conclusion that the initial investment in the existing Growing Schools website, and/or the way this resource had been directed, was ineffective in delivering project aims. This required a re-direction of the remaining project resource.

- **TES Discussion Forum.** Stimulating TES' Outdoor Learning forum activity required new resources, launching discussions about these resources and using them as contributions to TES newsletters. However project resource for the web service was largely invested in the Growing Schools website, which was unable to generate the required content (see previous section). The alternative of providing separate learning resources through central team input proved unachievable because of

capacity issues. In addition, TES site visitor numbers showed there was little activity on the Outdoor Learning forum. The central team therefore discontinued efforts with this and focused instead on Twitter, which was proving to be effective in promoting the project and generating discussion.

- **Social Media.** A project Facebook page was set up but was not successful because the central team did not have the capacity to manage the site effectively.

Successes with on-line presence

- **Countryside Classroom website.** The project supported and was a founding partner of the 'Countryside Classroom' website, which is now a national site for teachers and organisations interested in and engaged with LINE.
- **Wild Time for Schools.** This on-line platform, devised and developed by the Bristol and North Somerset hub leaders working in partnership with The Wild Network¹⁵, has a simple interface and focuses purely on LINE resources for teachers. It also offered the hub leaders control over content, a feature that was lacking in the Growing Schools website. The platform was developed in collaboration with beacon schools once they had established their own LINE practice, using their new experience of developing LINE to understand how best to support other schools to do the same. This model warrants further testing as it has the potential to deliver support for LINE as part of a hub delivery model.
- **Social media.** This proved helpful for the project to "listen" to those who were influential in education and environmental sectors. This listening function enabled the project to target individuals and identify popular topics to spread project messages effectively.
 - **Twitter** proved an effective means of promoting the project, and follower numbers consistently increased to around 2,000 by the end of the project; a significant number for a project of this scale. Outdoor learning sector organisations/stakeholders engaged well with the project through Twitter, frequently sharing content and tagging the project in features of interest. Tweets with photos or graphics generated substantially more interest than plain text.
 - **Outdoor Learning Blog by Natural Connections.** A low-cost WordPress blog was launched in March 2015 (<https://naturalconnectionsblog.wordpress.com/>), with the aim of promoting the project and enabling collaboration. This blog was almost entirely written by national and international guest bloggers, all of whom had interesting research and practice stories to tell. The blog also hosted project case study reports and project newsletters, together with newsletters from partners.

¹⁵ <http://www.thewildnetwork.com/>

6.12 Summary of key findings and implications – on-line activity

- **Lessons learned from the Natural Connections and Growing Schools partnership** informed development of the new Countryside Classroom website.
- **Project experience confirmed the need for a broad multi-platform media strategy** that was responsive in supporting local, project needs as well as having the capacity to inform at a national and/or international level. Collaborative development of on-line resources, designed *by* local LINE practitioners *for* local LINE practitioners (as with the Wild Time for Schools on-line platform) is also likely to have a place in future delivery.
- **Projects looking to develop on line content will need hub or central facilitation and management of content to be successful.** Teachers did not have time to contribute in this way but did appear to use appropriate internet based resources when available, including social media.
- **Low-cost, responsive use of social media** including Twitter and a WordPress blog were successful in supporting hubs and schools by promoting the project and disseminating information.

7. LINE in Schools

7.1 Characteristics of schools recruited to engage with LINE

Areas of high multiple deprivation in the South West were targeted by the project. The profile of the Natural Connections school sample was broadly similar to the national picture in terms of size, Ofsted grading, number of pupils with special education needs (SEN), and eligibility for free school meals (FSM). Within this however, there was a wide variety of circumstances. See NECR 215 Annex 1 for more detail.

There were no characteristics that made it more or less likely that schools would engage with LINE, but hub leaders did report that schools were most likely to engage with LINE if they had:

- **Senior leadership buy-in.** One hub leader summed up the general view when reporting it was essential that 'school leaders are fully on side ... the school leadership has that philosophy, and sees how LINE can fit within it and actually augment it'.
- **Confident, knowledgeable and enthusiastic LINE leadership.** Hub leaders felt an important aspect of sustained engagement with LINE was '*identifying the right leaders and advocates*' at all levels of the school staffing structure. The professional development of LINE advocates as leaders was also important as evidenced by the development of a Masters' Level 'Outdoor Champions' course at Plymouth University.
- **Openness.** All hub leaders spoke of the critical importance of what one termed '*fertile soil*', in which school leaders and staff were open-minded in their approach to teaching and learning, and were prepared to try new ways of working with LINE.

In line with the insight research findings¹⁶, there was no strong observable impact of Ofsted grading on likelihood to join the project. Some hub leaders reported that schools that were graded 'satisfactory' or 'requiring improvement' tended to be under more intense scrutiny and that school leaders would therefore be unlikely to try a new approach. However, another hub leader also observed that schools graded 'outstanding' were less likely to engage with a new initiative because they were unwilling to change a system that was producing the necessary academic results.

Nine secondary schools engaged with the project, which represents about a half the number that might be expected based on the ratio of primary to secondary schools in the south west: this reflects hub leaders reports of additional challenges in recruiting secondary schools, due to their time and curriculum pressures, and the need to engage with a much higher number of staff in these schools.

¹⁶ Rickinson, M., Hunt, A., Rogers, J. & Dillon, J. (2012). *School Leader and Teacher Insights into Learning Outside the Classroom in Natural Environments*. Natural England Commissioned Reports, Number 097.

7.2 Impact on LINE activity

The evaluation was able to contribute to the quantitative evidence base for LINE through a dataset of 121 schools completing the baseline survey and 87 completing the final July 2015 survey. Twenty-five schools completed all three surveys (baseline, July 2014 and July 2015).

Schools reported an increase in the average time on LINE per class per week across all three terms (see Figure 6 below). This was based on comparisons between autumn, spring and summer, using data reported in the baseline survey and the May 2015 activity survey. There was an increase of 70 per cent between the autumn terms, 60 per cent between the spring terms and 68 per cent between the summer terms. This uplift was statistically significant in all cases (the associated statistical tests gave: autumn p-value=0.003, spring p-value=0.005, summer p-value=0.003)

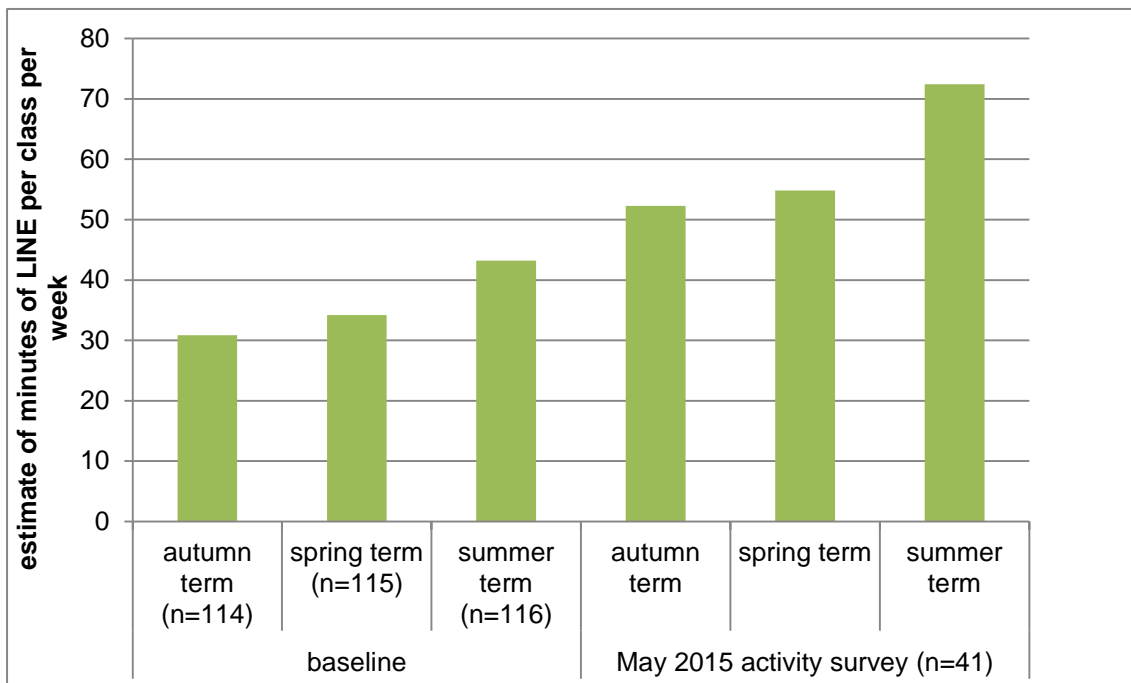
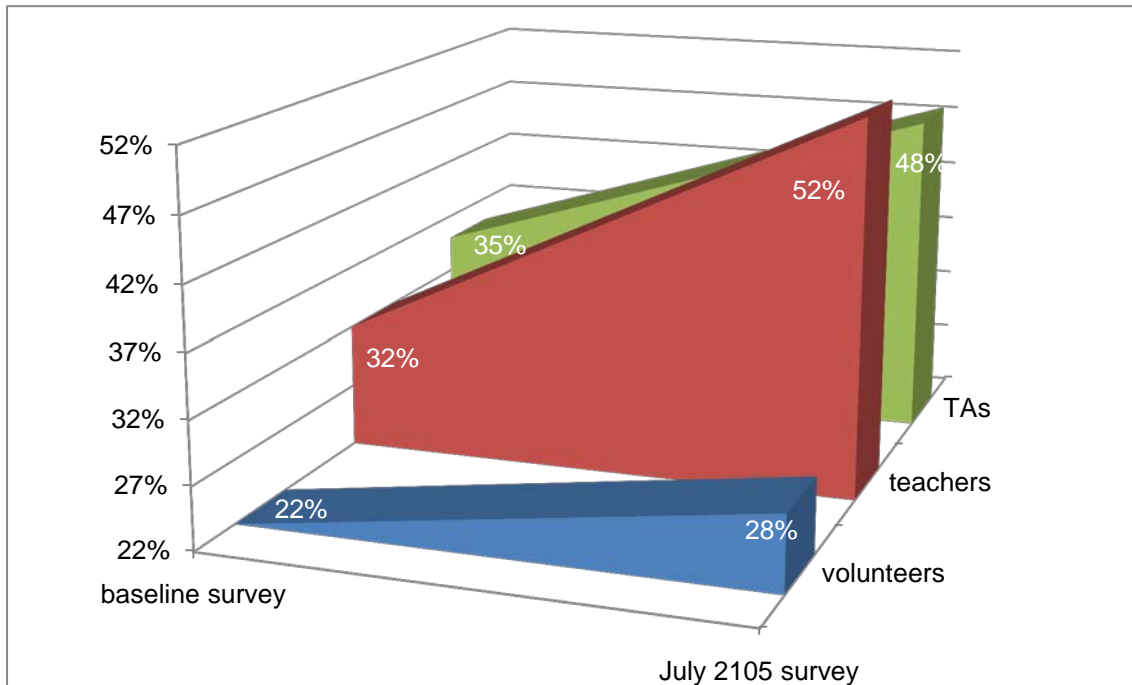


Figure 6: Estimate of minutes of school LINE activity (per week per class)

Staff and volunteers involved in LINE

There were significant increases in the proportions of teachers (32 to 52 per cent) teaching assistants (35 to 48 per cent) and volunteers (22 to 28 per cent) involved in LINE across project schools (see Figure 7 below).

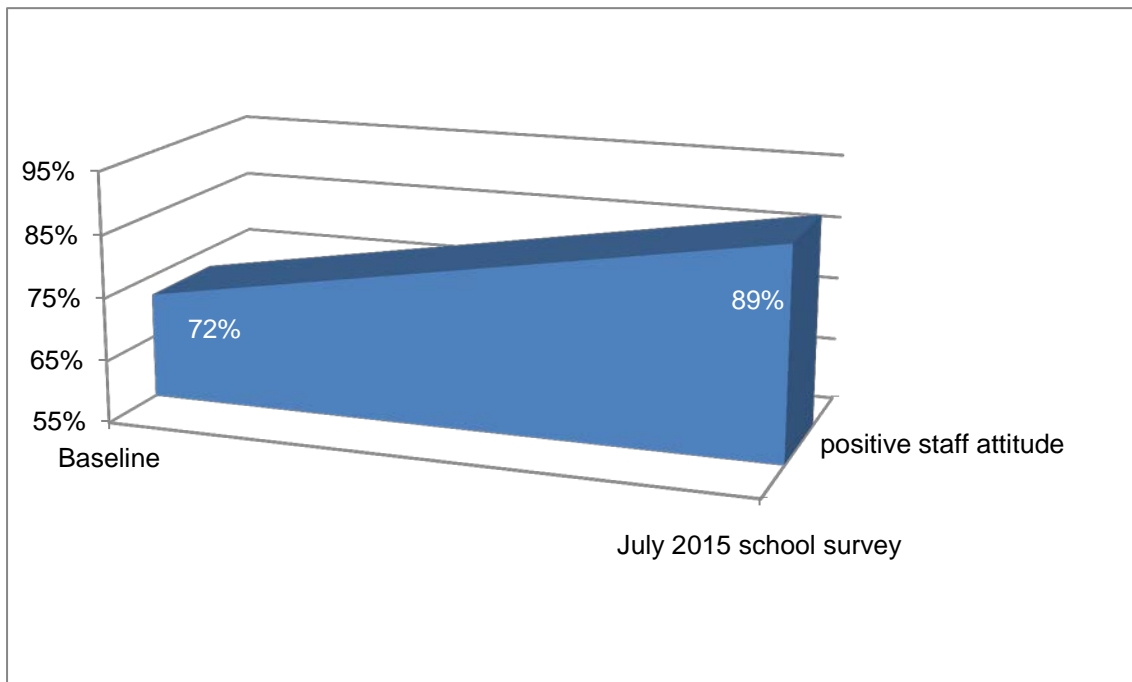


Baseline survey n=121; July 2015 survey teachers and TAs n=86, volunteers n=84

Figure 7: Increase in proportion of project school TAs, teachers and volunteers involved in LINE (all at p-values <0.001)

Schools with a positive attitude to LINE

There was a significant increase in the number of schools with a 'very positive' or 'positive' staff attitude to LINE (72 to 89 per cent, see Figure 8 below).

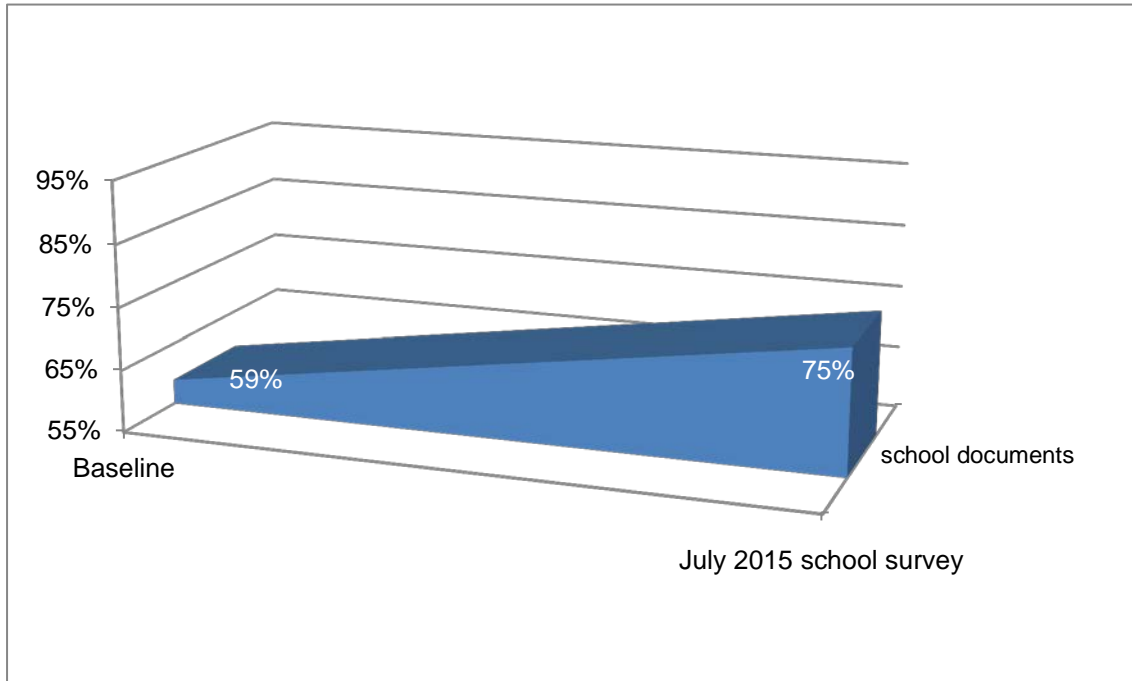


Baseline survey n=121; July 2015 survey n=88

Figure 8: Increase in proportion of schools with a positive staff attitude to LINE
(p-value=0.003)

Schools with LINE in their documents and plans

There was a significant increase in the proportion of schools reporting that LINE was in their School Development Plan or other planning documents (59 to 75 per cent, see Figure 9 below).

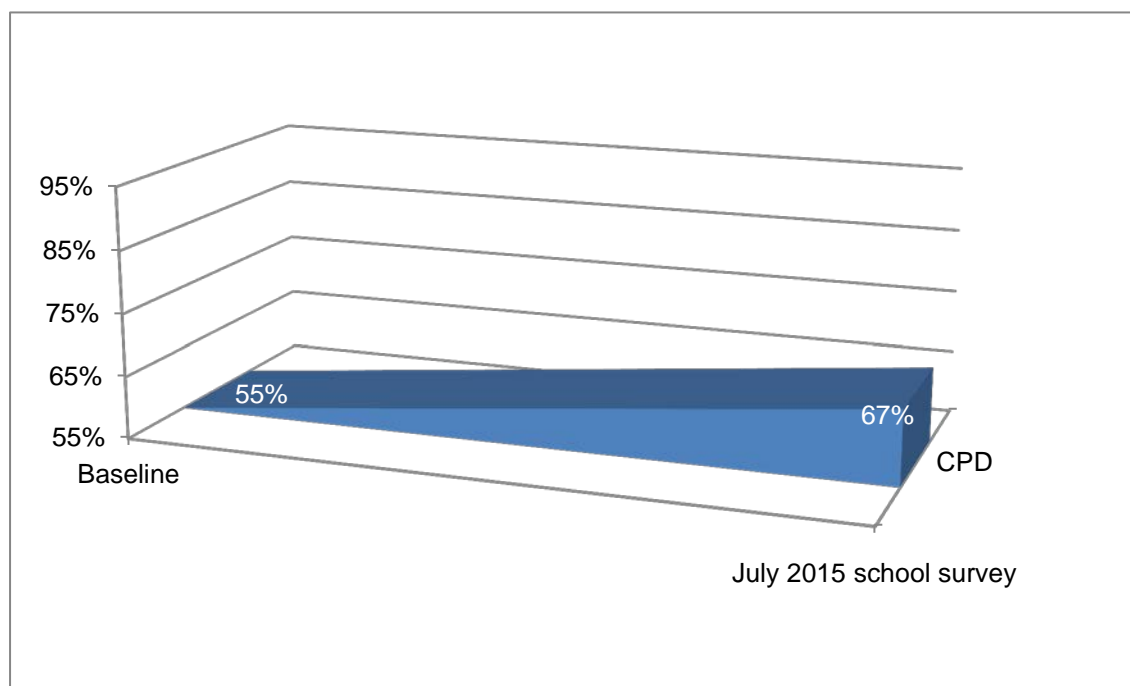


Baseline survey n=121; July 2015 survey n=87

Figure 9: Increase in proportion of schools with LINE in school documentation (p-value<0.01).

School involvement in LINE CPD

There was a significant increase in the number of schools whose staff or volunteers undertook LINE-related CPD (55 to 67 per cent, see Figure 10 below). These results together with case-study findings show that CPD remained important and that the CPD delivered during the project was likely to be focused on meeting school LINE needs.



Baseline survey n=121; July 2015 survey n=87

Figure 10: Increase in proportion of schools with staff undertaking LINE-related CPD (p-value=0.05)

Sustained increase in LINE activity

The different approaches hubs took to supporting sustainability of LINE are presented in detail in Section 11.2. Project evidence suggests that by the end of the project LINE was becoming part of ‘what teachers do’ in many project schools.

Data showing the percentage of teachers and teaching assistants involved in LINE, the presence of LINE in school documentation, staff and/or volunteer participation in CPD, changes to school grounds and school funding on LINE, were used to provide understanding of the sustainability of LINE in schools. Data from the 25 schools that completed the baseline and two subsequent annual surveys (July 2014 and July 2015) showed a sustained overall increase in LINE (see Table 9 below). Although these schools were not a representative sample of project schools, their results support the observation of and potential for sustained increase in LINE in project schools.

Natural England and Plymouth University will repeat the summer survey with project schools and interviews with hub leaders in 2016 and 2017. This will enable conclusions to be drawn

on the extent to which LINE is embedded in project schools after the withdrawal of central team support and the transition to a self-supporting, localised model.

Table 9: Subset of 25 schools' sustained increase in demand for LINE

PERCENTAGE OF .../SURVEY	BASELINE	JULY 2014	JULY 2015
Teachers involved in LINE	46	71	68
TAs involved in LINE	43	60	59
Schools with LINE in their documents and plans	84	n/a	88
Staff and volunteers attending LINE-related CPD	68	68	64
Schools working with LINE providers	52	40	56
Schools spending budget funds on LINE	n/a	76	80
Schools making changes to grounds	n/a	84	40

n=25 for all surveys

Note: schools were not asked about budget spend on LINE or school grounds changes in the baseline survey. Schools were not asked about documents and plans in July 2014 survey.

Demand for LINE provider support

Data from the project indicated that around a half of schools recruited were working directly with LINE providers, but that this proportion did not change over the project lifetime. A number of factors appear to have influenced this, including the length of time needed to recruit schools, schools' aim to develop their own LINE confidence and expertise, and hub leaders' reluctance to recommend any specific LINE provider to schools without impartial quality assurance.

In every hub area there were regular 'market place' events which brought teachers and providers together; several LINE providers provided CPD services to schools (including delivery of resources from strategic partnerships developed with the Council for Learning Outside the Classroom and Learning through Landscapes) and a number of project schools developed ongoing relationships with local LINE providers.

Although part of the culture shift achieved in project schools was to encourage in-house responsibility and capability for LINE within schools, progression of LINE practice may mean that more demand for external services will occur once teachers are looking to deliver more ambitious LINE activity. Relationships between organisations and schools through providing skilled volunteers for schools might also develop greater demand for external provider services.

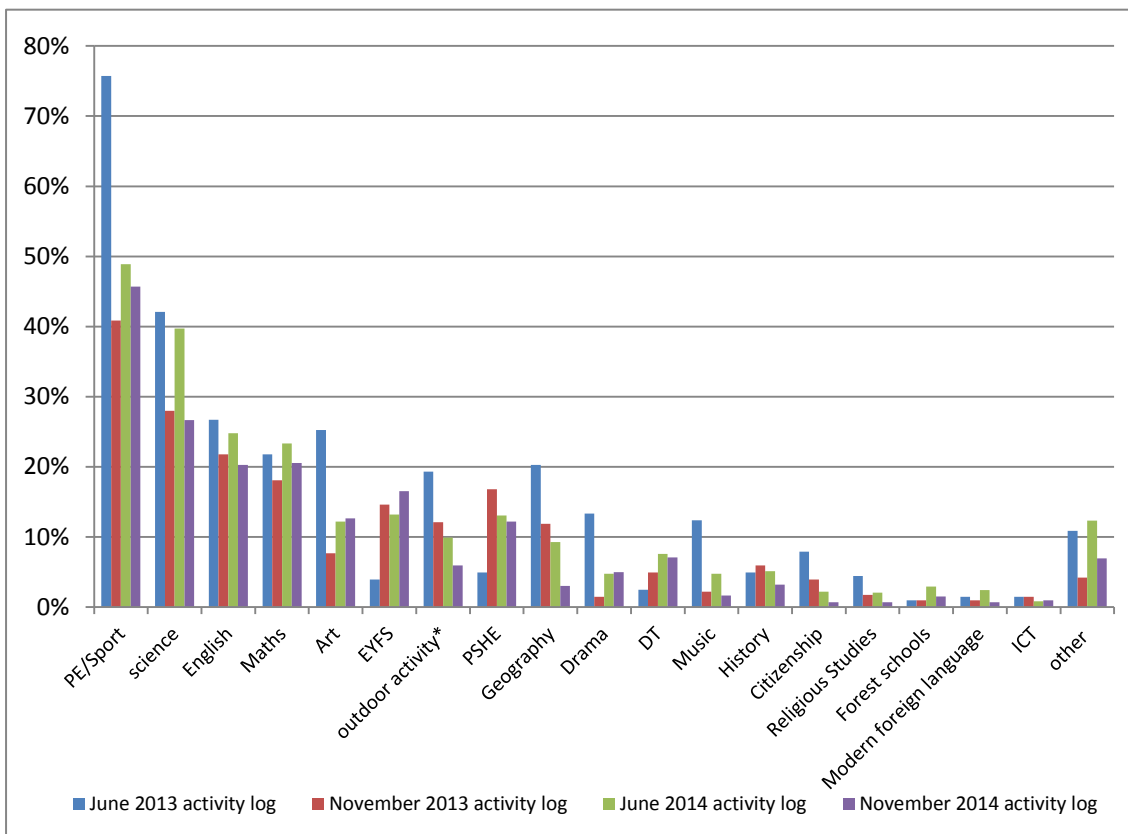
7.3 Scope of LINE in schools

This section examines the impact that the project had on supporting curricular and non-curricular learning.

Curricular LINE

Data from all relevant sources was consistent in the finding that LINE was used across all curriculum areas and that it was used most regularly and consistently in the core subjects of science, English and maths. PE/sport was the subject that was cited most often in activity logs, reflecting the fact that this is often delivered outside. There was debate amongst hub leaders and teachers as to whether PE/sport ‘counted’ as LINE, or whether it was delivered outside simply for practical reasons. Both approaches were reported by teachers during case-study visits.

Over 90 per cent of survey respondents to the four activity logs and one LINE activity survey indicated that LINE was either ‘very useful’ or ‘quite useful’ for curriculum delivery. Figure 11 below provides a snapshot of the patterns that emerged from the data in the activity logs.



June 2013: n=7 schools, n=202 returns; November 2013: n=17 schools, n=404 returns; June 2014: n=38 schools, n=819 returns; November 2014: n=39 school, n=720 returns.

*outdoor activity includes gardening/horticulture, outdoor learning and other outdoor activities not directly delivering other areas of the curriculum. These and ‘Forest School’ have been included as categories because they were all cited by teachers completing the survey; while not defined curriculum areas, evidence from the school case studies shows they are often used as inspiration or source material for curriculum areas.

Figure 11: Use of LINE for different curriculum areas (school activity logs)

In addition, case-study schools reported that LINE was valued for supporting:

- **Experience and wonder.** A teacher at one school emphasised the experiential and hands on nature of these experiences: ‘one of the key bits of the science curriculum is the wonderment of science. I think it is hard to bring in the wonderment of science stuck in a science lab for the whole year, whereas if you get outside you can give some people a real ‘Oh My Gosh!’” (teacher).
- **Creativity.** LINE was valued in English/literacy for bringing creativity to pupils’ work by firing their imaginations, and for providing them with first-hand experiences to write about: *‘I will do a lot of stories based in the woodland, using artefacts and natural objects... And we are always searching for a great hook for our learning experiences to try to get them [pupils] enthused ... I’ve seen a real improvement in children’s writing’* (teacher). Dance students in one school used their experiences to write scripts and stories to create movement material when back in the classroom.
- **Supporting particular concepts.** Most schools reported that they taught maths outside, and that they valued LINE for its contribution to *‘making abstract concepts real’* (teacher), often for concepts which children often found difficult, such as acceleration (illustrated by launching rockets) and shape and area: *‘I see [pupils] learning things sometimes that they don’t perhaps make sense of quite so quickly indoors ... This morning with the numeracy, I know a lot of children would have really struggled with grasping the concept of perimeters, but being able to walk it out ... made a lot more sense to them’* (teacher).
- **Making subjects come to life** and using LINE for role play and re-enactment. One teacher commented on the authentic atmosphere this created: *‘There is no way you could get that same sense of belonging to the past doing it in the classroom or the hall ... it’s just been amazing’* (teacher).

Non-curricular LINE

Case-study schools reported that they used and valued non-curricular LINE, for example through lunchtime, before and after school activities and trips not directly related to curriculum delivery. This was reported as providing different experiences that supported the development of foundational skills and attributes that engaged children and young people with learning (see Section 8).

Specific/frequently mentioned examples included:

- **Forest School** or Forest School-type activity.
- Gardening and wildlife clubs.
- **Using equipment and facilities in school grounds** including trim trails, nature trails, mountain bike tracks, climbing equipment, sensory areas, wildlife habitats, ponds and fire pits.
- **Visits to outdoor venues** such as local farms, parks and adventure playgrounds, the beach, outdoor pursuits centres.

Models of LINE implementation

Case-study visits showed that schools adopted different models of LINE implementation, with anything from a few, many or all of the staff involved with LINE. In all cases, implementation was dynamic and changed regularly as staff broadened their practice and discovered new ways of engaging children with their learning through LINE. Often this had the long-term aim of ensuring that LINE was practised by the majority of staff.

The different models that emerged were broadly:

- **Shared responsibility for LINE across all staff.** In this model, all staff engaged with a range of LINE activities and experienced the benefits of LINE for children's learning for themselves, encouraging them to embed LINE further into the school's learning culture. One hub leader described strong progress in this area, reporting that most beacon schools had *'very much taken on board the idea ... of LINE being something that is taken on as a whole school and woven through the curriculum, and that isn't just one person's responsibility'* (hub leader).
- **Responsibility resting with a few staff.** LINE was provided at set times, allowing these teachers to develop expertise and confidence in working outside, and accustomed children to working regularly outside. However, staff who were not involved personally with LINE tended to see it as someone else's responsibility and so were less inclined to engage with LINE.
- **Responsibility of teaching assistants (TAs).** LINE activity in this model was delivered during teacher planning, preparation and assessment time. Generally, this LINE activity was not explicitly linked to the curriculum but was focused on the wider benefits that LINE offered, such as improved social skills, behaviour, and health and wellbeing. TAs then provided the 'link' between these activities and the classroom by informing the teacher of children's achievements, new skills and new knowledge.
- **Integrating Forest School experiences** with curricular learning. In these cases, a Forest School leader would lead sessions alongside the teacher, giving the teacher time to observe and create links to curriculum topics. The aim was a more consistent approach to learning that linked LINE with lessons indoors in a way that suited each teacher's programme of learning.

Characteristics of successful LINE implementation

Regardless of the model adopted, the following characteristics emerged from the data as underpinning successful LINE implementation:

- **Creation of a positive staff culture towards LINE.** During the course of the project there was a statistically significant increase in the proportion of schools with a positive staff attitude towards LINE (see Figure 7, Section 7.2), indicating the success of all models of LINE implementation discussed above. This was viewed by most schools as an incremental or gradual process that was supported by increasing confidence and wider recognition and reward.

- **Confidence:**
 - knowledgeable and enthusiastic individuals inspiring and leading others in LINE activities
 - increasing staff confidence through formal and informal CPD
 - taking time: *'a gradualist approach is always a good one in terms of embedding [LINE]'* because it allows teachers to develop their practice and *'feel safe'* (teacher)
 - developing appropriate spaces in which to carry out LINE
 - LINE in structural processes such as lesson observations.

- **Wider recognition and reward:**
 - external recognition of schools' LINE work ('Green Schools' or 'Healthy Schools' awards, media reporting or external visitors coming to see good practice, for example)
 - parental recognition and approval, including comments from parents about enjoyment and the benefits for their children
 - advocacy, such as images of outdoor learning and new content for school websites to show a rounded approach to education
 - governor support
 - new partnerships, for example local businesses donating materials or staff time
 - integrating LINE with existing school-wide initiatives. Case-study examples included aligning LINE to the 'Rights Respecting Schools' agenda and using LINE to support 'Building Learning Power'
 - external initiatives such as local competitions.

- **Raising school aspirations for LINE.** Survey data showed that schools' aspirations to increase LINE activity and to undertake more regular LINE activity increased substantially between the baseline and the July 2015 surveys. A pattern emerged in school survey comments in which schools:
 - first, understood the benefits to pupils and teachers
 - second, increased levels of LINE activity
 - third, increased the regularity of LINE activity and embedded LINE practice across the school.

This shows that once schools had engaged with and experienced the benefits of LINE, they generally wanted to continue with and expand on their activities.

- **Enhancing teaching practice.** Although LINE was used across the curriculum, it was focused most strongly on the core subjects of English, maths and science. This suggests that schools recognised the benefits of LINE for supporting the quality and engagement of their students' learning and for enabling students to try new things, shown in the following examples:

- *'more exciting resources and ideas. Motivates learners, which is what teachers aspire to. Teachers are excited/braver to experiment with ideas'* (survey comment)
 - *'ways to include all children in a positive way'* (survey comment)
 - *'[LINE] allows me to use different skills in a different environment to the classroom. It has helped me gain confidence in a range of teaching methods and styles, for example; delivery in the classroom is very methodical. Outside you can step back and relax, give them [pupils] the resources and the methods to use and they can explore. [It's] more than just us delivering to them all the time'* (teacher).
- **Collaboration and networking.** The collaborative and participatory approach enabled school staff to tap directly into other teachers' experiences and ideas:
 - *'there is nothing more powerful than having another teacher say ... This is how I did it! ... And understanding how that teacher overcame different barriers'* (hub leader). In addition, opportunities to meet and discuss ideas with staff from other schools enthused, excited and inspired teachers:
 - *'We have really valued the Natural Connections cluster sessions - thank you!* (survey comment)
 - *'They are inspiring with new ideas! A great group to be a part of. I like the strong collaboration and support with other local schools - it helps to make LINE happen!'* (survey comment).
- **Developing school grounds.** There was a significant increase in the proportion of schools that reported they used their school grounds for LINE activities: use of gardens/wildlife areas rose from 86 to 98 per cent (baseline to 2015, p-value=0.005) and of other natural spaces rose from 83 to 96 per cent (baseline to 2015, p-value=0.007).

Case studies highlighted the importance of accessible spaces that were useful for LINE. Teachers used some spaces for investigation and/or inspiration, others for practical activity and yet others for reflecting on or summarising work. Playgrounds and tarmac spaces, although not part of the natural environment, were also important for providing spaces for teachers new to LINE to develop their confidence and outdoor practice and as (often larger) spaces for group demonstration and/or discussion.

Hub leaders and case-study schools also reported that the actual process of developing a range of spaces in school grounds for LINE activity was important for:

- creating 'ownership', sense of pride and achievement:
 - 'They've [pupils] just all worked together and they've had this great ownership of the garden'* (teacher).
- increasing staff confidence to teach outside. Hub leaders reported that grounds development raised awareness of LINE throughout the school and

'gave permission' to take lessons outside, and that an important step towards embedding LINE was often to ensure that the school grounds provided a safe and functional area for LINE activity.

- **Parental engagement.** Case-study schools reported LINE helped to engage parents with their children's education. Three features were reported:
 - *'children went home buzzing'* about LINE and it was these experiences they related to their parents above other school-day activities
 - LINE was perceived as *'non-threatening'* to parents who had previously been unwilling to engage
 - in one case-study school, LINE was reported as effective in engaging fathers.

7.4 Challenges to LINE implementation

Insight research¹⁷ for the Natural Connections project identified a number of challenges to LINE at a school level, and these were explored in depth through project surveys and case-study interviews.

Figure 12 below shows the five challenges to LINE that were most frequently reported by schools. Schools selected up to five main challenges from an extensive list and had the option to list any additional ones. The top five challenges most frequently selected by schools were:

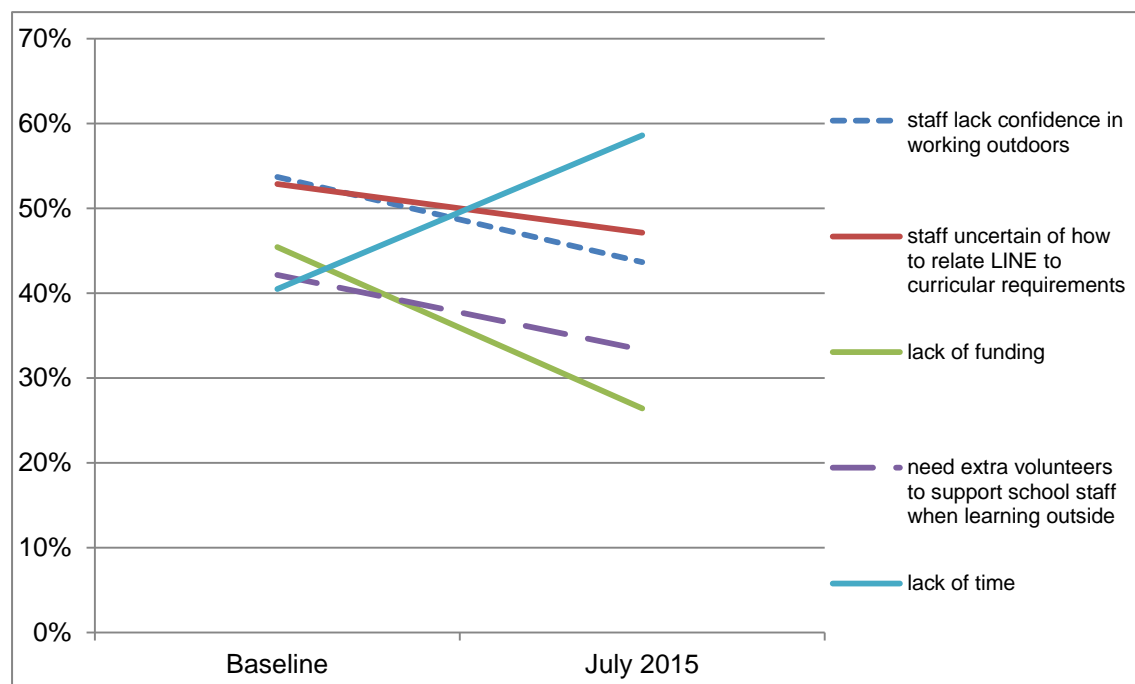
- **staff lacking confidence in working outside**
- **staff uncertainty about linking LINE to the curriculum**
- **lack of funding**
- **the need for volunteer support**
- **time.**

These challenges were relatively common across schools, but were not universally-reported, confirming that challenges for schools can be highly localised. Similarly, the challenges to LINE varied during the course of the project, suggesting an ongoing process in which schools addressed challenges sequentially and that, as confidence in LINE practice grew over time, new challenges arose as teachers took on more ambitious work outside. Some challenges required ongoing attention (such as planning schemes of work), but others (e.g. acquiring new waterproof clothing for pupils) were time-limited. This reinforces the importance for needs analysis at a school level and a regular review process.

The first four challenges reduced over the project lifetime. This reflects schools' developing understanding of how they could use reasonably low-cost LINE to support school priorities and to take measures to embed it into regular curricular and non-curricular activities. Similarly, the proportion of beacon schools indicating that the project had been effective/very

¹⁷ Rickinson, M., Hunt, A., Rogers, J. & Dillon, J. 2012. *School Leader and Teacher Insights into Learning Outside the Classroom in Natural Environments*. Natural England Commissioned Reports, Number 097.

effective in helping them overcome challenges to LINE was 81 per cent. These are strong indicators of the success of the hub leaders in their role.



Baseline n=121, July 2015 survey n=85.

Figure 12: The five main school challenges to LINE

However, the fifth main challenge, of time, increased over this period. To better understand this observation, the project ran an additional ‘Time for LINE’ survey with schools in May 2015. This asked LINE leads to select the two most important time pressures from an extensive list developed from interviews with hub leaders and schools. The most frequent responses that schools selected were that they needed time to:

- develop confidence in teaching outdoors (36 per cent)
- develop professional practice (34 per cent)
- communicate the benefits of LINE to fellow staff in schools (34 per cent).

This appears to demonstrate schools understanding of the fundamental factors of embedding LINE practice.

Hub leader interviews echoed the results of the school surveys, with hub leaders reporting that schools needed time for:

- **LINE leads to promote LINE within the school.** One hub leader commented that ‘*countering apathy*’ was a particular challenge to LINE, while others spoke of ‘*resistance*’ to LINE; all agreed that ‘*selling the value of it to teachers across the curriculum*’ took time.
- **Staff to understand the value of LINE.** One hub leader reported that: ‘It has taken a year for senior leadership to realise that what they [teachers] are doing is enhancing [pupil] learning and engagement’. Another remarked that: ‘schools have found that staff need time to see for themselves the benefit of LINE and to integrate it into their

practice. This cannot be rushed. In many schools it needed at least a year to bring all on board ... Rush it and you lose it'.

- **All staff to engage with LINE in their teaching.** Teachers needed time to attend both formal and informal CPD sessions to develop knowledge and expertise, and time to experiment with LINE in their practice. One hub leader commented that schools were often *'driven by performance managers in schools and Ofsted from the outside. The worry is around the need to do everything quickly, allowing limited time for reflection and development of teaching practice'*.
- **Supporting staff in other schools.** Natural Connections aimed to develop clusters of mutually supportive schools. Allowing LINE leads within schools the time to develop confidence and skills, and then to undertake outreach work with other schools was an important component to its success.

In case-study schools where the issue of time was addressed as successfully as possible, given numerous competing priorities, the time to enable or deliver LINE stopped being a significant challenge when LINE became part of normal practice and another tool that teachers could use confidently to deliver their curriculum.

Cluster schools tended to have lower levels of satisfaction with the project than beacon schools, with 29 of the 58 responding cluster schools reporting that the project was either 'very effective' or 'effective' in helping them overcome their challenges to LINE. This may stem from the fact that many of these schools were recruited later, so they had had less time to address the challenges listed above. Survey comments also suggested that communication between schools, competing priorities and/or difficulty engaging other staff with LINE were all more challenging for cluster schools than beacon schools.

7.5 Summary of key findings and implications – school implementation of LINE

- **The project assumption that there is a latent demand for LINE in schools was confirmed.**
- **Schools most likely to engage with LINE** displayed strong leadership for LINE and were open minded about trying new things.
- **There were statistically significant increases in LINE activity** over the timescale of the project. The evidence suggested this was likely to be sustained.
- **Initial LINE development in schools focused on activity delivered within school grounds rather than local greenspaces.**
- **Schools adopted many different models of LINE implementation**, with anything from a few, many or all of the staff involved with LINE. In all cases, implementation was dynamic and changed regularly as staff broadened and deepened their LINE practice.
- **The characteristics that underpinned and reflected successful LINE implementation were:**
 - creation of a positive staff culture towards LINE (including confidence and wider recognition and reward)
 - significant growth in school aspirations for LINE
 - enhancing teaching practice across the curriculum
 - collaboration and networking with other schools
 - school grounds development.
- **LINE was used across all curriculum areas**, but most regularly and consistently in the core subjects of science, English and maths.
- **Schools valued LINE** for enabling pupils' wonder and creativity, supporting teaching and learning of particular concepts, and bringing subjects to life.
- **Case-studies interviewees reported that schools valued non-curricular LINE activities.**
- **The proportion of schools that engaged with LINE providers did not change** over the project.

Table continued...

- **The most frequently reported challenges** to initial LINE development in schools were
 - staff lacking confidence in working outside,
 - staff uncertainty about linking LINE to the curriculum
 - lack of funding
 - the need for volunteer support
 - time.

- **The first four challenges all reduced during the project lifetime**, reflecting schools' developing understanding of how low-cost LINE could support school priorities and be embedded into regular curricular and non-curricular activities.

- **Time increased as a challenge for schools.** Schools reported needing time to develop their confidence and practice to teach outdoors and to communicate the benefits to others. This appears to demonstrate schools understanding of the fundamental factors of embedding LINE practice.

- **Challenges to LINE were school specific and changed** during the course of the project. This was shown to be an ongoing process in which schools addressed immediate challenges and then, as confidence in LINE practice grew over time, identified new challenges. Results suggest that an initial audit and priority assessment to develop a school action plan for LINE, followed by regular reviews, would help to identify and address solutions to particular issues as they changed over time.

8. The Impact of LINE on Teachers and Pupils

In this section we discuss the impact of LINE on individuals.

8.1 Impact on teachers

Evidence suggests that LINE can be a powerful vehicle for developing teachers' practice and increasing their satisfaction with their working life.

The following percentage of responding schools to the 2015 survey agreed that LINE had a positive impact on their:

- Teaching practice (79 per cent)
- Health and wellbeing (72 per cent)
- Professional development (69 per cent)
- Job satisfaction (69 per cent)
- Teaching performance (51 per cent).

No negative impacts were indicated by school survey responses and very few indicated no impact.

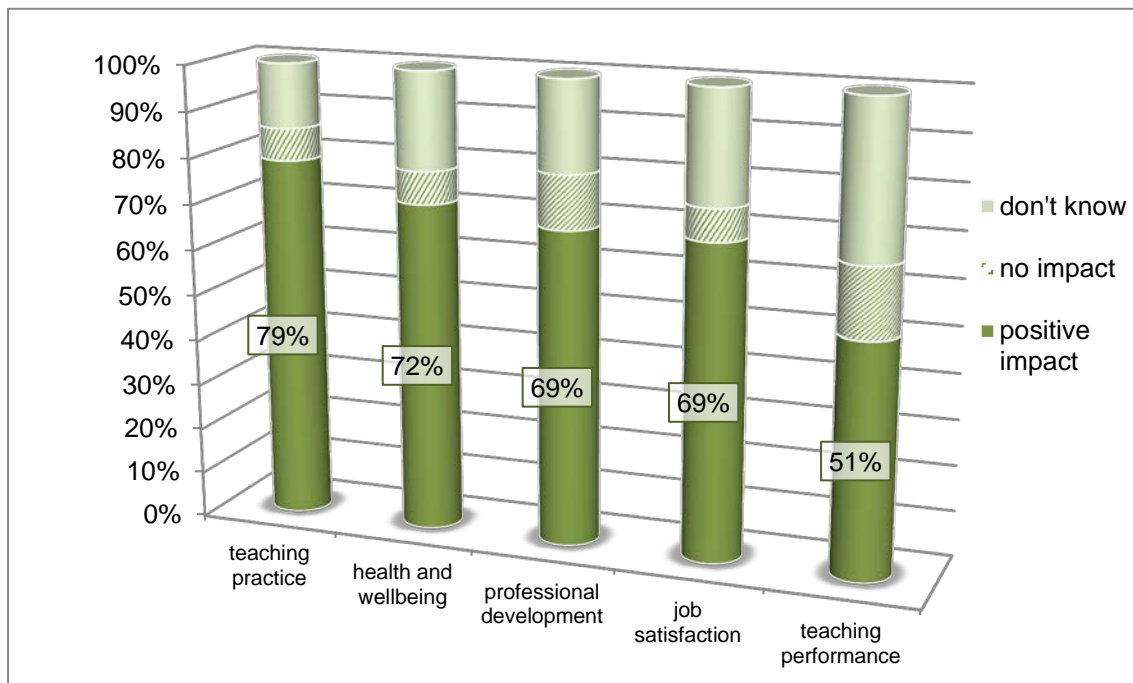
These positive impacts are exciting and important findings in the context of continuing pressures on teachers to raise attainment and to address teacher morale¹⁸ and retention. The comment below shows how LINE provided what one hub leader called a *'lifeboat'* in the pressurised environment of schools:

- 'The spaces that LINE activities engage all in allow stress/anxieties to be more manageable for both staff and children' (survey comment).

Case-study interviews reflected similar findings, often highlighting an impact on affective outcomes for teachers:

- 'I get a lot of personal satisfaction from it [LINE] but I think that is from seeing the [pupils'] engagement, the enjoyment ... Just the joy of being outside in the fresh air, engaged with nature, watching the seasons change, all the things I think are disappearing with children sat in front of televisions and X-boxes' (teacher).
- 'LINE feeds the soul' (teacher).

¹⁸ <https://yougov.co.uk/news/2012/06/07/british-teacher-morale-low/>



July 2015 survey: n=86

Figure 13: School assessment of LINE's impact on teachers' work

Respondents' relative unwillingness to attribute impact of LINE on 'teaching performance' (51 per cent) may be linked to uncertainty about evidence linking LINE and pupil attainment and because teaching performance in schools is generally measured by the levels of pupil progress. It was not possible to measure this over the project lifetime. However, this could be overcome by ongoing evaluation with project schools and by LINE lessons being observed and assessed as part of general school performance systems.

8.2 Impact on pupils

The evaluation aimed to test and quantify whether LINE delivered positive impacts in the broad outcome areas identified by Kings College London's evidence synthesis¹⁹.

The following percentage of respondents to the 2015 school survey agreed with the statement that LINE had a positive impact on pupils:

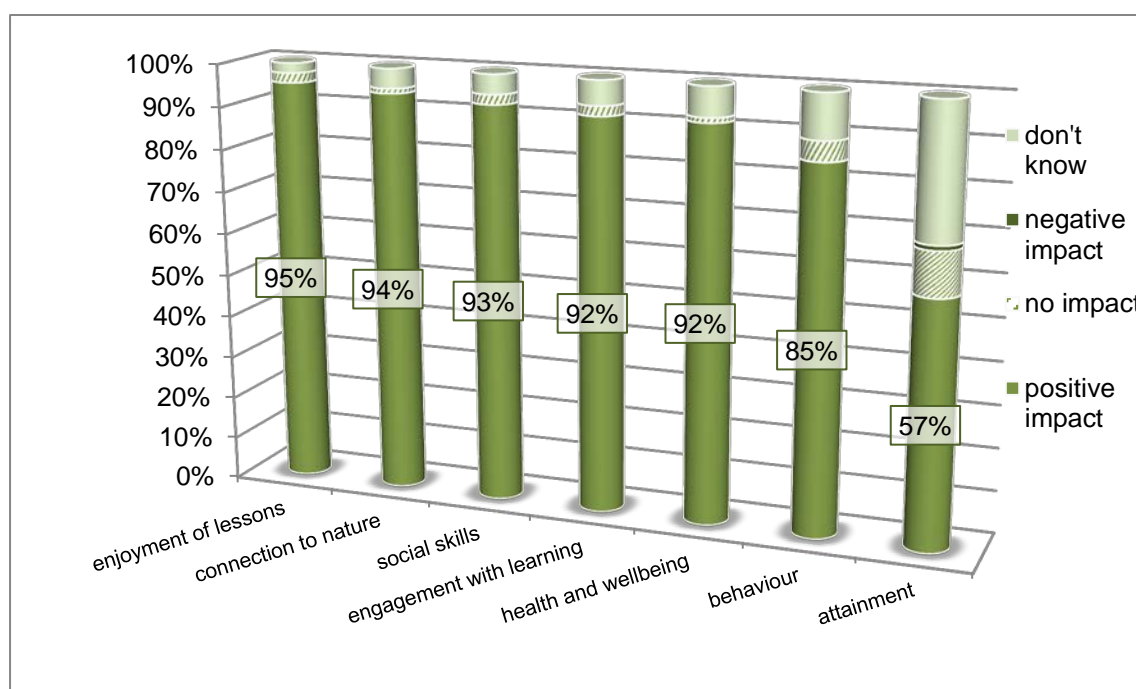
- Enjoyment of lessons (95 per cent)
- Connection to nature (94 per cent)
- Social skills (93 per cent)
- Engagement with learning (92 per cent)
- Health and wellbeing (92 per cent)
- Behaviour (85 per cent)
- Attainment (57 per cent).

¹⁹ Dillon, J. & Dickie, I. (2012). *Learning in the Natural Environment: Review of social and economic benefits and barriers*. Natural England Commissioned Reports, Number 092.

Only one negative impact was indicated in school survey responses and very few schools indicated no impact pupil outcomes (see Figure 13 above and 14 below). These very small numbers of non-positive responses made it hard to make the valid comparisons needed to attribute statistical significance.

Schools were more reluctant to attribute impact on pupil attainment (57 per cent) and evaluation of this was beyond the scope of the project. However there was a statistically significant difference between the proportion of schools that felt LINE had an impact on attainment and those that did not (p -value<0.001). Natural England and Plymouth University will repeat the Natural Connections school summer survey in 2016 and 2017, which will enable robust conclusions to be drawn on the longer-term outcomes.

These results suggest that all these outcomes are all worthy of consideration in developing standard LINE evaluation approaches. Likewise, each one of the impact areas warrants additional research to better understand the links between outcomes and theories of change.



July 2015 survey: n=87

Figure 14: School assessment of LINE's impact on pupils

Insight on outcomes from case study interviews and pupil surveys:

In case-study school inspection reports Ofsted frequently cited the benefits of high-quality LINE in case-study schools, in particular: pupil progression, enjoyment of learning, and spiritual, moral, social and cultural development.

The case-study interviewees were asked a general question about the impact of LINE on pupils; they were not, as in the surveys, asked if LINE had particular, named impacts. In the following section we discuss case-study responses under the themes that emerged most

strongly as foundational to successful learning: pupil enjoyment, attainment and engagement with learning, character and health and wellbeing.

Enjoyment

92 per cent of primary pupils responding to the pupil survey (n=448) agreed that they enjoyed lessons outside 'a lot' or 'a bit'. Girls recorded slightly higher levels of enjoyment than boys. Boys in Key Stage (KS) 1 indicated higher levels of enjoyment than boys in KS2, while girls' indicated enjoyment remained at the same levels in KS1 and KS2.

During case study visits, the following themes emerged from children's interview responses about LINE's impact on enjoyment:

- **Learning in different ways:** 'I enjoy doing the orienteering ... [We] did that for maths. So we, like, you'd have to work out equations to find ... out the number which you had to go to on the map ... It was a fun way of doing maths which I think a lot of people enjoyed'.
- **Practical context:** 'I really like stuff like history and that kind of stuff, and you can do it more easily with learning outside ... Because you can actually see, like, the areas of historical interest'.
- **Physical activity:** 'I like the fact that it [LINE] is something different, so you're not just stuck in a classroom but you're doing something active'. One child pointed out that 'you can't climb trees in class!'
- **Fresh air:** often contrasted with a stuffy classroom 'you don't have to be sat in a classroom which is stuffy ... It's nicer [outside] because of the fresh air'.
- **Engaging with nature:** it is 'fun when you are just sitting there doing a piece of work and you get this random bug on your clipboard ... or a butterfly comes and lands on you ... And it is just feels really special that we have got all the opportunity to do all this'.
- **New experiences:** 'It was my first time going on Dartmoor and it was incredible ... I actually went back with my family; we sat on a giant rock and had lunch. It was such a good school trip!'
- **Opportunity to succeed:** Forest School 'makes us feel ... good because sometimes we build our own bases ... We're proud of it'.
- **Sensory experiences,** such as: 'I enjoy running around and digging'; 'We can get messy'; 'I like all the sounds'.
- **Taking responsibility:** for living creatures such as chickens, bugs and sea creatures: 'I'm proud of myself because when we saw a crab lying on its side, we filled a bucket with water and put the crab back in the water. And it swam off!'
- **'Freedom':** which they interpreted in different ways:
 - **for discussion:** *'I feel like we have more freedom because we get to discuss more about what we are learning about with each other.'*
 - **to experiment:** *'You can do stuff that you can't do at home and in class.'*
 - **space:** *there is more room ... It makes me feel like I am free'.*

Attainment and engagement with learning

Teachers in case-study interviews reported having more confidence that LINE contributed to attainment than was indicated by survey responses. Two schools specifically reported that the rise in their children's attainment was measurable and was underpinned by LINE activities; in one of these, a senior leader commented that the school historically had issues with low writing levels and that: *'part of our journey with that has been to develop experiences for the children to write about, and a large number of those experiences are based in the outdoors ... Our writing results are now slightly above national average whereas they were well below before'*.

The main reason for teachers' reluctance to make direct links between LINE and attainment was their understanding of the difficulty of disentangling the different factors that lead to higher attainment. Interviewed staff spoke of the difference between higher quality of children's work that they could link with LINE and the *'measurable'* attainment that was recorded in external examinations such as Year 6 SATs in primary schools. Their point was that it can take time for the higher quality seen in pupils' LINE-related work to translate into externally reported SATs results; in primary schools only Year 6 pupils take these exams and, until LINE has become a regular part of each cohort's experience, the impact can be variable as it depends on how much LINE different classes have undertaken. This means that it might take some time before schools can measure the impact of LINE on children's attainment levels, and it is notable that the two (beacon) schools which reported confidently on LINE's contribution to their attainment results had been engaged with LINE for several years. It is also worth noting that many interviewees from case-study schools reported that they engaged with LINE for a number of reasons that were not necessarily directly related to attainment and that they understood that many of the impacts from LINE were not measurable.

LINE's impact on engagement appeared to underpin many interviewees' understanding of how to raise attainment: *'We have got pressures for attainment but actually if we can achieve engagement, we can increase attainment because we get the children on board because they're interested'*.

The model of securing pupil interest and engagement as central to growing confidence and attainment is depicted in Figure 15 below. This builds on a previous model²⁰ and has been developed through findings from the Natural Connections project data.

²⁰ Passy, R. & Morris, M. 2010. *Evaluation of Aimhigher: learner attainment and progression. Final Report*. Available at <http://www.hefce.ac.uk/pubs/rereports/year/2010/aimhigherattain/>, p.30.



Figure 15: The pathway to raised attainment through outdoor learning

Attributing a definitive link between LINE and academic attainment will remain challenging due to:

- The time between formal assessment points, particularly in primary schools. There could be six academic years between starting LINE (in Year 1) until a cohort of pupils is assessed in Year 6.
- The intermittent nature of much LINE delivery in schools and the number of different school initiatives supporting improved attainment. The complexity of adjusting for the different factors will make it difficult to establish direct links between LINE and improved attainment.

Health and wellbeing

- 92 per cent of schools agreed with the statement that LINE had a positive impact on pupil health and wellbeing.
- 72 per cent of schools agreed with the statement that LINE had a positive impact on staff health and wellbeing.

There was an implicit understanding in all case-study schools that children's health and wellbeing were improved through LINE; around half mentioned it directly. This effect was attributed to the physical and mental space that learning outside provided. Specifically, LINE was seen to:

- **Offer the space to reflect** and consider that can be difficult to achieve in the classroom. One headteacher reported that being outside provides '*an ambience that allows the mind to wander ... and staves off crises*'.

- **Allow children to escape the pressures of the classroom:** 'I think children are put under a lot of pressure to conform in the classroom, to conform to how a classroom should be, and there are no conformities outside' (teacher).
- **Allow children the time and space to be active.** This was reported as having both physical and wellbeing benefits; physical through the capacity to '*let off steam*' and '*use up energy*', and wellbeing through the sense of '*freedom of not being sat at a desk*' (teachers).

Several other projects, that studied the health and wellbeing outcomes more fully, emerged from the interest in the Natural Connections project. A report of a small study of physical activity as a result of LINE in one of the Natural Connections schools was published in *Education and Health*²¹. This suggested that LINE lessons stimulated greater equality of moderate and vigorous physical activity across all children than either classroom learning or break times. Evidence for LINE's support for physical health to emerge from the project was used to shape the Naturally Healthy Devon Schools Project and the Active Neighbourhoods project in Plymouth. The lessons from Natural Connections will also be used to inform another large scale demonstration project proposal, which has been developed to test delivery of both health and learning outcomes for children and their families in East London.

Character

Outcomes of LINE appear to include several factors at the heart of discussions around character education. Gutman and Schoon's (2013) literature review examines the impact of non-cognitive skills or 'character' on learning²² and provided evidence for the importance of foundational skills underpinning attainment. In this section, we draw on their definitions and case study insight to discuss the relevance of LINE to character education.

- Confidence and self-esteem

'Self-concept of ability' is defined as 'an individual's self-perception of their ability formed through experiences and interactions with the environment'²³ and 'self-efficacy' is considered to be 'an individual's belief that they have the capability to succeed at a particular task in the future'²⁴. These ideas relate to interview respondents' references to children and young people's confidence and self-esteem.

The case-study interviewees' emphasised the role of confidence in learning and that LINE led children to have greater confidence in their own abilities, sometimes through taking risks, so that they felt able to try different challenges within and outside the classroom.

²¹ Aronsson, J., Waite, S. & Tighe Clarke, M. (2015). Measuring the impact of outdoor learning on the physical activity of school age children: The use of accelerometry. *Education and Health*, 33(3).

²² Gutman, L & Schoon, I. (2013). *The impact of non-cognitive skills on outcomes for young people: Literature review*, Education Endowment Foundation. Available at: https://educationendowmentfoundation.org.uk/uploads/pdf/Non-cognitive_skills_literature_review_2.pdf.

²³ Gutman and Schoon, p.9.

²⁴ Gutman and Schoon, p.10.

Interviewees related three broad affordances of LINE:

- **offering children a wider range of learning opportunities.** *‘From an educational perspective it [LINE] can be really valuable ... because often the nature of outdoor learning is very practical, it’s very kinaesthetic and so for a lot of children that is really useful and that can ... secure learning and understanding that something more paper based, more oral or visual ... might not work for them’* (teacher).
- **giving space in which teachers and pupils can get to know each other and change perceptions of each other.** *‘When we spoke to the students about the benefits [of LINE] ... they talked about how they felt so much closer to the teacher ... [it was] a much more relaxed environment’* (teacher).
- **offering space for pupils to take risks in a way that builds confidence.** One school reported that *‘We do allow our children to wander ... and, perhaps because we are not looking at them constantly eagle-eyed, maybe they feel more free to take risks and feel okay if they fail’* (teacher).

- Motivation

We have taken children’s reported engagement with learning as a proxy for motivation to learn. Schools and teachers reported that LINE consistently enthused and motivated children resulting in greater engagement with learning, for the following reasons:

- **fosters a love of learning**
- **encourages pupils to enjoy the learning process**
- **offers a different way of learning that is perceived as fun and gives purpose to learning.** *‘One [benefit of LINE] that applies to most ... children would be a love of learning ... Yes, it diversifies different ways of learning; yes, their behaviour is better outside. But it’s just seeing the smiles on their faces ... that love and enjoyment of being at school!’* (teacher).

Gutman and Schoon’s review suggests that context can play an important role in attitudes towards specific activities and that teachers can help to shape pupils’ motivation through their methods and classroom context²⁵. This may be reflected in school staff case study interview reports of higher engagement during LINE activities for many pupils. In order to maintain pupils’ higher engagement with learning, it is likely that LINE sessions should be planned in a way that continues to stimulate interest and enjoyment in different ways and different contexts; this may also be mirrored by the development of project schools’ range and diversification of LINE over time. This suggests that external providers may have a role in later stages of progression in LINE experiences as the familiar is built upon and developed.

- Perseverance

‘Perseverance’ is defined as ‘steadfastness on mastering a skill or completing a task’²⁶. Case-study interviewees referred to perseverance in the context of problem-solving or

²⁵ Gutman and Schoon, p.15.

²⁶ Gutman and Schoon, p.17.

completing a task over a prolonged period. Teachers spoke of children's pleasure in accomplishment, and noted the growth in both their confidence and inter-personal skills arising from completing difficult or time-consuming tasks, and how they learned to '*stick at a particular task*'. Perseverance may be the 'outcome of a situational context rather than a characteristic of the individual'²⁷ so it follows that school-wide LINE activities, undertaken over the long term, could potentially make an important contribution in this area.

- Self-control and behaviour

'Self-control' is defined 'as exerting self-control over behaviours, feelings, and thoughts in order to conform to rules, plans, promises, ideals, and other standards'²⁸. Interviewees from all case-study schools spoke of the positive impact of LINE on children's behaviour. However, the case studies also confirmed the findings of the school surveys that it could take time for pupils to learn to work purposefully outside - one teacher commented that behaviour had been '*a real issue*' with one group of boys when they first started LINE, but by the time of the researchers' visit, '*they follow their own lines of enquiry or create something of their own, but it is always purposeful and there aren't any issues with behaviour with them now*' (teacher).

Another case-study school interviewee reported that behaviour in the school had '*vastly*' improved over the last few years, had recently been rated by Ofsted as 'outstanding' and that: '*outdoor learning has definitely played a massive part in improving their behaviour*' (senior leader).

Other case-study interviewees commented:

- '*If actually you're not very good in the classroom, to have it shoved down your throat five days a week must be purgatory, I think ... [LINE] just varies their diet, doesn't it?*' (teacher).
- '*I feel that I can let them [pupils] go; I don't have to have them within my sight every moment [because] I think they are learning to be responsible in their own right*' (teacher).

- Social skills

Social skills are defined as including 'a range of pro-social behaviours such as cooperation, sharing, helping, communication, expressing empathy, providing verbal support or encouragement, and general friendliness or kindness'²⁹. Interviewees from all case-study schools reported that children's social skills were improved through LINE, with one respondent arguing that this area was the foundation of a successful school: '*Unless you get this bit right, you don't get anything right in schools because ultimately it's about people*'.

²⁷ Gutman and Schoon, p.18.

²⁸ Gutman and Schoon, p.20.

²⁹ Gutman and Schoon, p.25.

LINE was seen to support the development of social skills chiefly because it provided opportunities for activities that are less often carried out in class, with children and young people moving around and working together on practical projects. Specifically, LINE was seen to have a positive impact on communication, teamwork, encouraging new friendships, being kind and leadership: *'Children who wouldn't necessarily be seen as leaders here [in school] become leaders there [at Forest School] because they are a bit more daring than other children ... they are prepared to do things and so people are more likely to follow them'* (teacher).

A few interviewees reported that children who have previously found peer relationships difficult had widened their friendship groups through changing their behaviour outside. This, in turn, increased their confidence and self-esteem within other parts of school life, thereby illustrating the inter-relatedness of these different aspects of learning.

There appears to be a need for more longitudinal research that investigates how social skills can be fostered in places such as schools and the effect of LINE is likely to be a useful avenue to pursue.

- Resilience and coping

Resilience is defined as 'positive adaptation despite the presence of risk, which may include poverty, parental bereavement, parental mental illness, and/or abuse', whereas coping 'refers to a wide set of skills and purposeful responses to stress'³⁰. Although assessment of specific risk factors was beyond the scope of our evaluation, the case-studies offered a few insights how LINE supported particular children:

- one child with sensory difficulties overcame his initial hatred of rain and mud through LINE. *'That was a really valuable experience for him; to overcome those big barriers in terms of his learning with sensory issues'* (teacher).
- a student at a special school had a history of being restrained in a previous school. In this school, where students were regularly taken outside, the teacher commented that this rarely happened now, *'and I think it's partly having the space to go outside ... It helps [name] feel so much more relaxed ... in a non-threatening environment'* (teacher). Working close to animals, such as rabbits, was reported to help the process.
- fostering a love of the school grounds was seen to support pupils in a way that *'helps them through the bits of school life that they struggle with'*.

³⁰ Gutman and Schoon, p.27.

8.3 Summary of key findings and implications – impact of LINE on teachers and pupils

- The following proportion of schools surveyed agreed that **LINE had a positive impact on teachers'**:
 - teaching practice (79 per cent)
 - health and wellbeing (72 per cent)
 - professional development (69 per cent)
 - job satisfaction (69 per cent)
 - teaching performance (51 per cent).
- The following proportion of schools surveyed agreed that **LINE had a positive impact on pupils'**:
 - enjoyment of lessons (95 per cent)
 - connection to nature (94 per cent)
 - social skills (93 per cent)
 - engagement with learning (92 per cent)
 - health and wellbeing (92 per cent)
 - behaviour (85 per cent)
 - attainment (57 per cent).
- In the surveys, **a majority of schools (57 per cent) attributed direct impact of LINE** on pupil attainment. Teachers in case-study interviews reported more confidence that LINE contributed to attainment than seen in survey responses.
- **In case-study school inspection reports, Ofsted frequently cited the benefits of high-quality LINE** for pupil progression, enjoyment of learning, and spiritual, moral, social and cultural development.
- **Many case-study interviewees reported that they engaged with LINE** for reasons that were indirectly related to attainment, including behaviour, social skills, health and wellbeing, engagement with learning and enjoyment, all of which were cited as foundational to successful learning. Schools also valued LINE for supporting teaching and learning through enabling wonder, creativity, support for particular concepts and bringing subjects to life.
- **Health and wellbeing emerged as an important LINE outcome.** Ninety-two per cent of responding schools agreed with the statement that LINE had a positive impact on pupil health and wellbeing and 72 per cent agreed with the statement that LINE had a positive impact on staff health and wellbeing. Specifically, LINE was seen to offer the space to reflect, allow children to escape the pressures of the classroom and the space and time to be physically active.

9. Project Budget

The project had a total contract value of £700,000 provided by DEFRA, Natural England and Historic England.

One of the seven key principles of the project was financial sustainability and therefore the project was expected to fully test revenue models and explore the use of relevant funding streams to support delivery and test the potential to charge for services.

A target was set to raise c. £100,000 through income generation activities during the life of the project (c. £70,000 for the operation of the central team and c. £30,000 through the web service).

Income contribution

The income contribution target of c. £70,000 for the central team was tackled in two ways: direct income generation and budget reconfiguration.

- Direct income generation

Income of c. £22,500 was raised

The central team secured a full-time student placement for a year, funded by Plymouth University, to work with the Project Delivery Manager with a focus on income generation activity.

Income streams tested were very varied ranging from easyfundraising.org and advertising in the project newsletter to applications for major grants, crowdfunding campaigns and corporate sponsorship. **The two most successful elements of the central team's income generating activities were running CPD events and additional research and consultancy work** and these were most congruent with and contributory to the project's focus.

- Budget reconfiguration

Net savings totalling c. £38,000 were achieved

The central team achieved 32 per cent of the income generation target. In order to address the shortfall the decision was taken to reduce central team and project expenditure. This was achieved through a combination of reconfiguring roles and responsibilities, reducing project operational costs, securing additional financial support from Natural England and costs saved through in-kind contributions.

A total income contribution of c. £60,500 of additional finance was made (representing 87 per cent of the income generation target for the central team).

Web service income target

The c. £30,000 target was set to ensure the revenue necessary for ongoing maintenance and development of the web service. A comprehensive and diverse income-generation plan was drawn up which included on-line paid-for curriculum resources, donations, advertising

and membership fees. However, despite this planning, income from the web service was unsuccessful due to the failure of the Growing Schools website to develop as planned and the decision to withdraw from the web service contract. This led to a saving in the overall budget of c. £16,500 leaving a shortfall of c. £12,500 in the web service income generation target.

9.1 Budget successes

- Managing a challenging budget, whilst being responsive to changing circumstances and still delivering a successful project.
- Generating an additional financial contribution of c. £60,000.

9.2 Budget challenges

- Income generation proved highly challenging to deliver alongside the other requirements of project delivery.
- Assumptions and targets for generating income from a web service that required development and operation in a short timescale.

9.3 Summary of key findings and implications – budget

- Income generation as a central team target was challenging.
- Income generation **targets would be best focused on project activities aligned to supporting longer term sustainability**, such as training and consultancy. Project planning should recognise the need for the time and skills needed to resource this.

10. Added Value

10.1 In-kind added value

Considerable additional value was added at all levels of the project via the central team, project sponsors, hub leaders, partners and schools.

In-kind contributions to the project reached a total estimate of £235,700, which is equivalent to 34 per cent of the total project value.

Central team:

- Plymouth University academics, support staff and students, including feedback on evaluation design, web service, media support, photography and press coverage.
- Plymouth University venues and facilities for research and CPD meetings
- Research money to further explore case-study data and to fund national and international conference attendance
- Design and printing.

Project commissioning organisation, Natural England:

- Additional staff time to support project management, communications and media, events management, admin support for evaluation, advocacy and Project Advisory Group
- Use of Natural England venues.

Hub leaders:

- Considerable additional time beyond their contract for management, delivery and administration
- Meeting spaces
- Partner contributions from organisations such as Wildlife Trusts, Project Wild Thing, CPD providers
- One hub leader applied for and received an Ernest Cook Foundation grant to support CPD.

Other partners:

- Donations from Learning through Landscapes, who provided CPD membership for all beacon schools, fundraising advice and materials for the 'Welcome Pack' for project schools
- Donations from Vango Ltd, who supplied ten beacon schools with tents
- Donations from a range of partners including books, seeds, trees, plants, venues, staff time and refreshments
- Discounts for Natural Connections schools at Council for Learning Outside the Classroom CPD events
- Project ambassadors attending events to promote the project.

Schools

- Time, facilities, refreshments, advocacy, workshops and CPD expertise, all beyond their commitment to delivering the project locally.

10.2 Strategic partnership added value

The project formed a number of strategic partnerships with organisations through targeting by the central team and hub leaders, or through contact by prospective partners as a result of the publicity about the project's impact in schools.

Strategic partnerships were established with volunteer bureaux in Bristol, Cornwall and Plymouth; and between the Bristol/North Somerset hub leader and Project Wild Thing. Another significant partnership was that established between the Campaign to Protect Rural England Devon, Natural England, Devon County Council and the Devon Local Nature Partnership, resulting in securing £48,000 to run the Naturally Healthy Devon Schools project. This has extended the reach of the Natural Connections project with an additional emphasis on the pupil health benefits of LINE.

Other partnerships and relationships were developed with:

- **Regional organisations**, such as Cornwall Local Nature Partnership and Public Health Devon and the Cornwall Association of Primary Headteachers
- **Local organisations** such as and Public Health Torbay, the Torbay Coast and Countryside Trust, Devon Wildlife Trust, Wiltshire Wildlife Trust, school curriculum networks in Torbay and Plymouth.
- **Local projects** such as the *Plymouth Woodland* project, the Plymouth University and Silvanus Trust *Good from Woods* project, and Bristol *Tree Pips*.
- **Wildfowl and Wetlands Trust *Learning in Nature Collaboration* project** - this was funded by HSBC and run in partnership with the Bristol hub leader. The project is based at WWT Slimbridge Wetland Centre and incorporates elements of the Natural Connections model within a specific LINE provider setting³¹.

³¹ <http://www.gloucestershire.gov.uk/schoolsnet/CHttpHandler.ashx?id=62730&p=0>

10.3 Summary of key findings and implications – added value

- **Substantial additional value was brought to the project at all levels and this both underpinned and reflected project success.** Hub leaders in particular worked to very restricted budgets and added substantial in-kind value on the basis that the project had strong alignment to their core values. The large central organisation had the capacity and ability to provide additional resources and to draw in strategic partners. For this demonstration project, the added value from associated research activity of the central organisation was a substantial benefit to the project.
- Project planning should recognise the time, skills and effort needed to meet targets for income generation.

11. Sustainability of Hub Delivery and Legacy

One of the specific responsibilities of the central team and hub leaders was to test financially sustainable models of LINE delivery. The central team created and adopted a Sustainability Action Plan in July 2013. The project returned evidence of a significant ongoing embedded LINE practice among the central team, hub leaders and project schools, summarised below.

11.1 Central team

Specific work that contributed to the sustainability of project delivery and project legacy included:

- **Testing the income generation potential of the central team role** such as project management, research and CPD activities. A business plan supporting the amplification of Natural Connections was drafted.
- **Two new Masters modules:** 'The Experience of Outdoor Learning' and 'Outdoor Champions'.
- One new Plymouth Plus undergraduate module 'Knowing Inside Out' with 60 students.
- Support for Plymouth University Initial Teacher Training and Education Studies programmes, and the Social Work BA course.
- Contribution to the development of the 'Countryside Classroom' website.
- **Suite of Naturally Connected Curriculum resources** developed by a team of academics, teachers and student teachers. These will be used to develop a guide for schools and organisations looking to implement LINE.
- **Securing £48,000 funding for and supporting establishment of the 'Naturally Healthy Devon Schools' hubs** in response to wider interest in the project and development of toolkit for schools to evaluate healthy outcomes.
- **Two (unsuccessful) research bids** with the aim of supporting development of control data set and further explored the links between different outcomes, and extended testing of sustainability and outcome delivery in project schools.

11.2 Hub leaders

The project provides evidence for a sustainable, cultural shift towards LINE practice in schools. Natural England and Plymouth University have committed to repeat the school summer survey and hub leader interviews in 2016 and 2017 to enable conclusions to be drawn on longer-term outcomes and whether LINE practice is indeed retained in project schools after transition to a self-supporting, localised model.

The project aimed to test and reach conclusions about ways in which hub leaders could generate sufficient revenue to cover and sustain their brokerage costs by the end of the project. It was anticipated that this would include introducing charges to schools on the basis of the value delivered by the brokerage and the services this facilitates from others.

During interviews hub leaders referenced a number of different proxies for indicating sustainability in project schools including integration of LINE into the curriculum, the presence of LINE in school development plans and budgetary spend on LINE. They all had

views on the potential sustainability of the project in their hubs and approached their work with sustainability in mind. All five hubs are continuing LINE hub level activity, outlined below.

- Bristol

The hub leaders reported that work with schools was phased, with the initial focus on mapping LINE to the curriculum so that momentum was built slowly and practices established sustainably. They communicated clearly with schools that they would, towards the end of the project, be stepping back to a purely administrative role to allow schools to take the lead. At this time, hub leader focus moved to supporting the Wild Time for Schools on-line platform, CPD programme and networks for schools and LINE. Much of the responsive nature of project development in this hub was focused on developing the model's sustainability.

The Bristol hub has now started to implement a paid for business model for LINE services, based on operating a successful educational consultancy and a popular membership scheme for schools that offers three levels of CPD service (not just in LINE). LINE CPD was introduced into the Bristol hub leader membership offer during the Natural Connections project to complement the organisation's other activities.

The Bristol hub leader also supported development of The Wildfowl and Wetlands Trust's ongoing 'Learning in Nature Collaboration' at the Slimbridge Wetland Centre in South Gloucestershire, informed by the Natural Connections hub model.

- Cornwall

The Cornwall hub leaders' approach to sustainability was related to ensuring that staff in leadership roles engaged with LINE and based on building capacity within the LINE leads in beacon schools to support strong clusters of schools. The hub leaders reported that toward the end of the project, schools were increasingly integrating LINE into existing budgets and across the curriculum. Schools continue to be supported, with access to LINE CPD through subscription to the WildTribe programme. A collaborative handbook is planned to support further spread of the learning from the project.

- North Somerset

The North Somerset hub leader began collaborative work with the Bristol hub leader and this joint work, with other partners in the three local collaborations, forms the foundation of this hub's sustainability. The North Somerset hub leader brings expertise in Forest Schools and school grounds development to complement the ongoing consultancy work of the Bristol hub leaders.

- Plymouth

The hub leaders were committed to develop a sustainable model from the start, believing that the networks developed through the project can be continued with a relatively small investment. They also believe, however, that these networks are unlikely to survive without funding of some kind.

Integration of Natural Connections into the hub leaders' work has enabled a clear, ongoing offer to project schools through a paid-for business model for LINE services that was initiated at the end of their Natural Connections contract. Plymouth's LINE offer to schools is now branded Plymouth's Outdoor Learning Community and, for an annual subscription, provides networking opportunities, CPD and events with the aim to share experiences and learning, link schools and providers more closely, broker volunteer support and signposting resources.

- Torbay

The first Torbay hub leader intended that sustainability should be supported through CPD meetings and that ownership for these would eventually be taken on by schools. However the model was highly dependent on the enthusiasm and knowledge of one individual who then left the organisation.

The second hub leader implemented plans of strengthening links with the Torbay schools' curriculum network and with CPD and LINE providers with the aim of creating a sustainable network over the long term.

11.3 Summary of key findings and implications – sustainability of hub delivery and legacy

- **The project provides evidence for a low-cost model** to enable a sustainable, cultural shift towards LINE practice in schools.
- **Support for LINE networking among schools** requires ongoing coordination at a local level. Although many schools will commit to LINE, they cannot commit to coordinating an additional network to support this.
- **All hub leaders developed and are testing models** to ensure sustainability of LINE networks to support schools in their hubs. It was not possible to test longer term success of these during the project lifetime, although Bristol and Plymouth City Council hubs have already established chargeable services to underpin ongoing hub delivery. If a strong, evidenced case is made that LINE will support school priorities and also pupil engagement and attainment, then schools are willing to invest in LINE services.
- Natural England and Plymouth University have committed to **repeat the school summer survey and hub leader interviews in 2016 and 2017** to enable conclusions to be drawn on longer-term outcomes and whether LINE practice is indeed retained in project schools after transition to a self-supporting, localised model.
- Lessons from Natural Connections informed development of the Countryside Classroom website.
- **Partnerships between HEIs and other organisations** may be an effective local strategic partnership for amplification of LINE activity, as HEIs can support schools with action research, which in turn can construct evidence needed for school development, funding and encouraging wider adoption.

12. Conclusion

The project provides strong evidence that a distributed model of independent brokerage can unlock latent demand, support schools to overcome local barriers to LINE, adopt and embed low-cost LINE practice across the curriculum, and deliver a range of positive outcomes for teachers and pupils, including character development through improving behaviour, social skills, health and wellbeing and engagement with learning.

This was achieved through hub leaders, with experience in education at a local and regional level, coordinating support and networking for schools in order to share and develop outdoor learning practice. Good relationships with hub leaders helped to identify barriers, which varied between schools, and appropriate forms of support. Despite a diversity of challenges, these were reduced by involvement in the project and the principal barrier became time to facilitate as much LINE as schools wished to do.

The evidence suggests that demand from schools was enhanced through whole school cultural shifts that supported the sustainable adoption of LINE policy and practice as it became part of 'what schools do'. Schools invested in their school grounds, in leadership for outdoor learning and used LINE across core curriculum subjects, which is indicative of how LINE was increasingly recognised and promoted within schools.

The project was able to capture deep insight and quantitative data on a range of positive outcomes for schools. Detailed analysis of the relative effectiveness of the delivery model tested has helped to clarify essential elements of outdoor learning development. These included school autonomy in choosing how they engage with LINE and for whole school action planning with independent brokerage to access training and guidance, and embedding LINE within curriculum subjects and other school priorities for its long term sustainability. These insights in turn will be used to inform strategies and plans to amplify support for LINE delivery in schools at both a strategic and a local level.

The scale of recruitment and retention of schools, and the considerable added value offered at all levels, points to the success of the demonstration project and to its participants' commitment to LINE.